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N.A.A. BULLETIN

February 1960

In Three Sections
Section 1

Looking Ahead in Financial Management

■

Studies in Advertising Cost Analysis, Warehouse Cost Allocation

■

A Reminder of Currency Conversion Problems in Foreign Operations

N.A.A. BULLETIN

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Contents

Page

— Of Current Importance —

RECENT TRENDS AND TOOLS IN FINANCIAL MANAGEMENT by H. M. STILLER

Whether decentralization, now fashionable, will remain so engages this author's interest but even greater attention is given in this article to the function of financial management however set up, and the tools which it requires 37

ALTERNATIVES IN CONVERTING THE STATEMENTS OF FOREIGN SUBSIDIARIES by ROBERT E. JOHNSON

More and more home companies are expanding operations into foreign countries and, accordingly, the currency convertibility problem is gaining in significance. The accountant is often in a dilemma as to how to reconcile controversial requirements resulting from the complexities of foreign exchange. The present author offers some alternatives applicable to various possible situations 83

ACCOUNTING AND OPERATIONS RESEARCH — EXAMPLE OF A PROBLEM IN MARKETING CHANNELS by FRANZ EDELMAN

Some fresh thoughts on the role of accounting in modern business, as viewed by an operations research man, are presented here and thoroughly supported by an example drawn from a case in which the interaction between the accounting unit and the remainder of the business — and the interdependence of their development — is shown to be significant 27

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Page

EFFICIENT INVENTORY CONTROL THROUGH MONTHLY REPORTING by DONALD W. SMALL

The ultimate aim of two reports presented in this article and the action they generate is risk reduction. Through these two implements of inventory control, as the author explains, the risks may be identified in a timely manner. In addition, a clear indication of the effectiveness of existing control may be obtained and a sound future management policy with respect to inventory designed 5

SIMPLIFYING ACCOUNTING WORK IN SMALLER COMPANIES

by MARION H. SIMPSEN

Not advocating simplification for its own sake or as a general campaign against necessary complexities in accounting, the present author develops the who, why and how of organized action toward an attainable degree of simplification. Practical answers to some possible problems are given from author's own experience 69

— Two Studies in Distribution —

ADVERTISING EFFICACY — AN ANALYTICAL STUDY

by HAROLD W. FOX

Only after the factors relevant to the subject of his study have been revealed, usually by research preceding the advertising campaign, can the analyst approach the problem, itself, test the interrelationship of causes and effects, formulate his findings and, as the present author feels, provide operating management with information which can be of utmost importance 53

A PRACTICAL WAY OF ALLOCATING AND CONTROLLING WAREHOUSING COSTS

by STEPHEN B. ACHTER

Warehousing costs are split into space costs and handling costs by the company serving as background for this article. The former are charged on a cubic-feet-occupied basis and the latter are distributed on material-moving-out basis with a single measurement unit established for each category, resulting in relatively simple allocation and control of these costs 77

— Industry Studies —

Page

COST CONTROL IN A LARGE FEED COMPANY

by JOHN W. GERBER

A cost control program—how it was developed and how the general principles of cost control were applied to specific cost areas—is presented by this author, who, also, provides useful explanations as to possible problems, their solutions and final results of such a program.. 61

NET PROFIT ALLOCATION IN A RETAIL CHAIN

by HOWARD W. ANDERSON

Each company has to reach its own conclusion as how to wrestle with its particular problems. This is especially true while making a selection among numerous methods of profitability measurements. In the case presented by the author, allocation of net profits to units on tangible net worth is the answer which, although somewhat inexact, constitutes an efficient tool in decision-making 47

DESIGN FOR CONVERSION TO FULL COSTS BY A PUBLISHING COMPANY by THOMAS P. MORRIS

A major publishing house found that the application of the full cost concept might provide a better means of performance evaluation and more complete information for management decisions. The present author describes illustratively the necessary steps in adapting the company's cost accounting practices to a full costing system..... 15

— Proposals, Suggestions and Comments —

Vendor Code Numbers

by WILLIAM E. MITCHELL 92

Cost Reduction in the Accounting Office

by CHARLES E. KLINCK 60

Property Insurance and Its Cost

by J. H. PFLIEGER, JR. 25

How to Move Toward More Adequate Educational Programs

by JENE A. SUMNER 81

BEYOND THESE COVERS 94

Efficient Inventory Control through Monthly Reporting

by DONALD W. SMALL

FROM THE STANDPOINT of sound accounting practice, inventory control has always been a major factor in the management of a well-run business. Through intelligent use of this medium we may reduce our investment, conserve space and reduce exposure or risk.

Within our company important adjuncts to the regular semi-annual inventories are the inventory and exposure report and the inventory par report. These two management aids are prepared monthly and are prime factors in the development of the month-to-month objectives. It is through these two reports in conjunction with the regular monthly financial data, that an inventory control system is utilized to its maximum advantage for subsequent risk reduction action.

Inventory & Exposure Report

As implied by the title, the inventory and exposure report (Exhibit 1) provides management with its actual dollar exposure as of a given date, that is, the investment in inventories and commitments which are subject to risk of price declines, either in selling price of finished goods or market price of commodities. Furnished also by the report are the monthly position of the investment in finished goods and raw materials and the extent of the commitments for raw materials, together with the firm sales orders. The report is geared to use "futures," should they be an integral part of the business.

Of equal importance are the weeks' supply figures which accompany each segment of the report. This time-factor provides a sound basis for deciding future action as regards each function depending on the conditions anticipated in the immediate future. Each division of the report is compared against the final plan and last year's actuals, with the attendant variations from each. The final plan relates here to the budget for the month covered by the report and encompasses all that could logically be anticipated at the time of its preparation.

DONALD W. SMALL, Kalamazoo Chapter, 1955, is General Accountant for the Carton and Container Division of General Foods Corporation, Battle Creek, Michigan. Mr. Small graduated from Western Michigan University with a B.S. degree.

Preparation of the Inventory & Exposure Report

Briefly, here is how the report is prepared and the significant factors which affect the figures in it.

Last year's actual section figures are readily available from the general ledger and adaptable to work sheets. Finished goods, as it is construed in the report, represents our finished goods as it appears on the balance sheet.

Number of weeks supply is arrived at in the following manner: The following month's standard cost divided into our net finished goods gives a month's supply figure, which is converted into a week's supply basis by multiplying it by 4.33, the average number of weeks in a month.

The raw materials figure is derived from the general ledger raw material inventory account. For the corresponding week's supply, we once again refer to the general ledger for the raw material usage. In the case of raw material, we find it advisable to deal with the following two months' usage, as the raw material inventory usually exceeds one month's supply. Dividing the raw material inventory figure by the total of the two months' usage, we have the supply

INVENTORY and EXPOSURE REPORT

ACTUAL RESULTS FOR_____ DIVISION

Month Ending_____ 19____

LINE NO.	DESCRIPTION	THIS YEAR'S ACTUAL	FINAL PLAN	LAST YEAR'S ACTUAL	VARIATIONS (Over) Under	
					PLAN	LAST YR ACTUAL
	DOLLARS (IN THOUSANDS)					
1	FINISHED GOODS	452	480	481	28	29
2	RAW MATERIALS	660	710	989	50	329
3	TOTAL INVENTORIES	1,287	1,370	1,651	83	364
4	COMMITMENTS & FUTURES	436				
5	TOTAL	1,723				
6	LESS: FIRM ORDERS & HEDGED FUTURES	1,273				
7	EXPOSURE	450				
	COMMENTS:					

LINE NO.	DESCRIPTION	THIS YEAR'S ACTUAL	FINAL PLAN	LAST YEAR'S ACTUAL	VARIATIONS (Over) Under	
					PLAN	LAST YR ACTUAL
	WEEKS SUPPLY					
8	FINISHED GOODS	2.4	2.2	3.3	(.2)	.9
9	RAW MATERIALS	3.9	4.1	6.2	.2	2.3
10	TOTAL INVENTORIES	6.3	6.3	9.5	-0-	3.2
11	COMMITMENTS & FUTURES	2.6				
12	TOTAL	8.9				
13	LESS: FIRM ORDERS & HEDGED FUTURES	6.2				
14	EXPOSURE	2.7				
	COMMENTS:					

EXHIBIT 1

expressed in terms of two months' supply; dividing this by 8.67 (average number of weeks in two months), we reduce it to a week's supply basis.

The total inventories section is taken from the balance sheet and represents all inventories in the plant, i.e., raw material, packaging material, finished and semi-finished goods and supplies.

Commitments and futures, as we define them for the purpose of this report, are the unfilled balance of all raw material purchase orders and/or contracts of the last day of the month. In our particular situation, we do not compute any of the remaining items below the total inventories line for last year's actual.

Final plan figures, by and large, follow the same pattern as that which is used in this year's actual section. The one notable exception is that the profit plan, prepared well in advance of the actual month's activity, relies, to some extent, on previous year's experience, together with known factors which are expected to influence the situation.

Actual finished goods figures are taken from our current month's balance sheet.

Calculation of the raw material usage is based principally upon the established standard cost for the period raw material is to cover. For the purposes of this paper, this period will be the following two months after the date of the report. This is necessary in determining our weeks' supply of inventory and is arrived at in one of two ways, depending upon the month of the quarter in which we are working. In the case of the first month of a quarter, we simply take two-thirds of the quarterly profit plan's standard cost as, at that time, there is nothing sounder to base our estimate on. The situation changes, however, for the second month's raw material figure and, again, for the third month. The weekly sales report (Exhibit 2) plays a key role in the preparation of the second and third month's figures, particularly columns for quarterly actual sales and estimated sales.

After the lapse of the first month of any given quarter, the pattern of our sales for that period begins to take shape and, with the aid of the sales department, we can refine our estimate of the quarterly sales. This is also repeated after two months' actual sales, giving us a still more accurate picture of the present quarter's sales. For the raw material computation at the conclusion of one month's actual sales, we add the first month's actual to the estimated balance for the quarter which gives us the present evaluation of our quarter sales. For the following two months, however, all we need concern ourselves with is the estimated sales for the remainder of the quarter. From the profit plan, we obtain the percent for standard cost to net sales; this we apply against the remainder of our quarter sales estimate and obtain our following two

months' estimate of standard cost. By applying the ratio of raw material to standard cost production, the material usage is factored out.

At the completion of two months' actual, the above procedure applies with one exception, i.e., only one month remains in the quarter and the estimated balance covers it. Therefore, we calculate our standard cost for that month

WEEKLY SALES REPORT Date:

WEEK ENDING:

PRODUCT BY CUSTOMER	SALES DOLLARS IN THOUSANDS Weekly Actual	Qtrly. Actual	Qtrly. Budget	% Sales Qtrly. Actual - Budget	Estimated Sales Balance of Quarter (Ord. plus Est.)
Product A					
Location 1	10	329	586	56	
Location 2		35	22	157	
Location 3	56	1,484	1,509	98	
Location 4	9	227	159	143	
Location 5			154		
Intercompany Total	75	2,075	2,430	85	
Location 5		1			
Location 6	1	5			
Location 7		2			
Outside Company Total	1	8			
Product A Total	76	2,083	2,430	86	
Product B	-	135	190	71	
Product C					
Location 1	16	135	149	91	
Location 2	1	116	99	117	
Product C Total	17	252	248	101	
Product D					
Location 1	3	115	48	237	
Location 2	4	79	117	68	
Location 3	12	480	575	84	
Location 4			38		
Location 5					
Intercompany Total	21	674	778	87	
Location 1	-	3		82	
Location 2	10	143	175	82	
Location 3	-	2	63	5	
Location 4	-	-	14		
Location 5	-	3	10	36	
Location 6	1	11	10	109	
Location 7	-	27	24	112	
Location 8	-	-	4		
Location 9	1	36	24	148	
Location 10	-	21			
Outside Company Total	12	246	326	76	
Product D Total	33	920	1,104	83	
InterCo Grand Total	114	3,136	3,646	86	
Outside Grand Total	13	254	326	79	
GRAND TOTAL	127	3,390	3,972	85	

% Quarter Elapsed

Credit for W/E 1959 =

EXHIBIT 2

and add to it one-third of the standard cost as it is estimated for following quarter in the final profit plan for that quarter; applying our ratio of 90 percent we have raw material usage figure. To arrive at weeks' supply we simply divide the actual raw material inventory figure, which may be obtained from the month-end balance sheet, by estimated raw material usage.

Total inventories are taken from the balance sheet. Their attendant weeks' supply is the sum of the finished goods and raw material weeks' supply figure.

At this juncture, we deal with the more speculative phase of the report, our next item being commitments and futures. As a definition has already been given, we shall proceed directly to the acquisition of the data necessary. It has been proven through experience that the most satisfactory source of this information is the scheduling departments. Here the people who are charged with the responsibilty of procuring our raw materials can readily supply us with the balance outstanding of unfilled raw material purchase orders in terms of units. This information is then assigned an average actual price and extended to obtain its dollar value. This then represents the commitments. The attendant weeks' supply figure we derive through ratio and proportion, using the corresponding figures assigned to raw material.

The next line of the report is simply a total of the inventories plus the commitments.

The calculations involved in obtaining the firm orders data are a bit more lengthy than any other previously discussed segments of this report. A very helpful work paper in coordinating all pertinent data necessary in developing our firm order values is shown in Exhibit 3. Examining it, we find our on-hand

Worksheet

	Raw Material			Finished Grades	
	Corrugating	Other	Total	Total	Division total
On hand - (par report)	239	421	660	452	1,112
On order (commitments)	121	315	436		436
Total	360	736	1,096	452	1,548
Inventories covered by sales contracts					
Total sales contracts	115	1,596	1,711	554	2,265
Std. cost @ 82%	94				
Std. cost @ 67%		1,069			
Raw material content @ 90%	85	962			
Inventories	85	736	821	452	1,273
Firm orders - $1,273					

EXHIBIT 3

inventories readily available from our inventory par report. This report will be discussed in detail later. For our own particular needs, we break down the raw material into two classifications, corrugating and other. The on-order commitments are also broken down to coincide with the requirements here.

The next category on the worksheet represents inventories covered by sales contracts. This is based upon the open balance of firm sales orders on hand at month's end in the sales department. It is furnished to accounting broken down by product lines. Accounting, in turn, adjusts it to remove from the anticipated sales figure that portion which represents finished goods sold but not billed, still in the plant. This segment of the sales is derived by utilizing the monthly summary of semi finished and finished goods inventory prepared by the cost department. By dividing the various inventories (broken down into product lines) by their respective ratios of standard cost to sales, we convert them to their marketable value. Reducing the original sales department figures by this inventory figure, we obtain the desired total sales contract figure. At this point, we apply an average standard cost rate for each category of raw material to obtain the standard cost of each. Applying the raw material ratio factor to each variable cost gives us the raw material portion of each. In the interest of accuracy, and conservatism, we take the lesser of the totals between line 3 and the last line arrived at by applying the raw material ratio. Thus, the firm order weeks' supply is obtained by applying ratio and proportion, using total inventories as the left hand of the equation. A section is provided for comments on one or more facets of the report. The variations sections are self-explanatory. They are assigned varying significance by each individual of management concerned with the inventory report.

Inventory Par Report

The inventory par report (Exhibit 4) concerns itself strictly with the current status of the raw material inventory and the factors which influence its existing level. This report is of special value to those in management who are particularly interested in the scheduling of raw material into the plant from the vendor and thence into the production process. The report is broken down into two distinct classifications, one dealing with quantity in tons, the other with dollars in thousands. Each of these divisions is accompanied by a par, thereby affording management with two explicit measurements against the established level to be achieved.

The par value assigned to each material represents the ideal amount which should be on hand at month's end. This is established jointly between the management personnel of the various scheduling functions and the supervisor of

INVENTORY PAR REPORT

Date _____

ITEM	QUANTITY IN TONS							DOLLARS (In Thousands)		
	ON HAND		IN TRANSIT		TOTAL					
	ACTUAL	PAR	ACTUAL	PAR	ACTUAL	PAR	VAR.	ACTUAL	PAR	VAR.
CARTON BOARD - KRAFT	321	202		200	321	402	81	64	81	17
CARTON BOARD - CHIP & OTHER	552	400			552	500	(52)	58	52	(6)
SUB-TOTAL	873	702		200	873	902	29	122	133	11
KRAFT LINER	1,433	1,700	156	200	1,589	1,900	311	203	242	39
BARDCOR	286	350			286	350	64	36	44	8
RAW OVERWRAP PAPER										
RAW CEREAL LINER PAPER										
WAXES										
PRINTING INKS										
CELLOPHANE										
OTHER RAW MATERIAL										
TOTAL RAW MATERIAL	3,286	3,300	237	400	3,526	3,700	176	660	662	2
FINISHED GOODS								452	480	28

Distribution: *Includes $

Prepared By _____

EXHIBIT 4

budgets. Actual preparation of the report is accomplished at each month's end by the general accountant.

Preparation of the Inventory Par Report

The initial step is recording the pars on the report in the quantity section. These pars, furnished by the supervisor of budgets, are established by analyzing the forthcoming quarter's production schedules and translating this data into terms of raw material requirements. The pars are broken down by individual raw material classifications in intervals of one month through the current quarter (Exhibit 5).

The raw material report (Exhibit 6), which is referred to for all actual ending inventory quantities and their dollar value on hand at month end, provides us with the necessary information to proceed with the preparation of the actual figures. Only those segments of the raw material inventory which are of major importance are itemized on the report. The remaining minor items are grouped under the caption, other raw material. These are supplied by production scheduling, which supplies all the information relevant to quantities. The general accounting unit applies average actual prices to each individual item and extends it for its dollar value.

INVENTORY PAR REPORT

Date _____

ITEM	QUANTITY IN TONS							DOLLARS (In Thousands)		
	ON HAND		IN TRANSIT		TOTAL		VAR.			
	ACTUAL	PAR	ACTUAL	PAR	ACTUAL	PAR		ACTUAL	PAR	VAR.
CARTON BOARD - KRAFT	150	140	150	160	300	300		24	24	
CARTON BOARD CHIP & OTHER	300	305			300	305		36	37	
SUB-TOTAL	450	445	150	160	600	605		60	61	
KRAFT LINER	1,032	1,000	205	200	1,237	1,200		148	144	
HARDCOR	289	300			289	300		35	36	
RAW OVERWRAP PAPER										
RAW CEREAL LINER PAPER										
WAXES										
PRINTING INKS										
CELLOPHANE										
OTHER RAW MATERIAL										
TOTAL RAW MATERIAL	1,321	1,300	205	200	1,526	1,500		183	180	
FINISHED GOODS	1,771	1,745	355	360	2,126	2,105		243	241	

Distribution: *Includes $

Prepared By _____

EXHIBIT 5

RAW MATERIAL REPORT No. 1A-1 Month Ending

Commodity	Unit	On Hand Beginning of Month	Received During Month	Deliveries Other Than Consumption	Used During Month	Cost		Price		On Hand End of Month	Value of On Hand		Adj.
Case Ink													
Twine 16-01	lbs.												
Con. Case Material	lbs.												
.009 Hardcor	lbs.	785,405	521,030	3,200	731,425	43,885	00		.0600	578,210	34,692	00	
Kraft Liner 26#	lbs.	463,324	192,282		294,870	17,692	00		.0600	360,736	21,644	00	
Kraft Liner 33#	lbs.	878,492	202,438		325,348	19,521	00		.0600	755,582	45,335	00	
Kraft Liner 42#	lbs.	955,139	728,604		826,079	49,565	00		.0600	857,664	51,460	00	
Kraft Liner 69#	lbs.	50,341	90,659		53,012	13,181	00		.0600	87,988	5,279	00	
BLK Liner 42#	lbs.	3,300								3,300	1,296	00	
40# Jute	lbs.												
50# Jute	lbs.												
Borax	lbs.												
Formaldehyde	lbs.												
Liquid Caustic Soda	gal.												
Flake Caustic Soda	lbs.												
Staley Starch	lbs.												
Bandcor Starch	lbs.												
Cardosol #2931	lbs.												
Mixed Glue	lbs.												

EXHIBIT 6

We now summarize, by classification, all raw material to obtain the total weight and its corresponding value. Dividing the total weight by the total value, we arrive at an average actual price for one individual category, which apparently represents most accurate price available when dealing in grouped classifications as we are here. This is repeated for all categories except the other raw material classification.

With the preparations accomplished, we may now proceed with filling out the report in the actual on hand column by inserting the totals of the various categories in their proper slot. The in-transit actual is provided by the accounts payable accountant who, upon closing the invoice register, classifies all in-transit inventories. With both of these steps done, it is only a matter of adding across to arrive at the total actual.

The variance column represents the difference between actual and par. If the actual exceeds the par, it is designated as unfavorable and shown in brackets. Our initial step in completing the money columns for the actual values is to insert the total raw material and finished goods figures. These are obtained from the general ledger after the books are closed for the month.

We now extend both the par and actual quantities by our respective average prices, thus obtaining the corresponding dollar values. The value of the other raw material is arrived at by adding the values of all known raw material classifications and deducting this sum from the total raw material as it is derived from the general ledger. Variations represent the difference between the par and actual values. Unfavorable variances are shown in brackets.

Reducing Inventory Hazards

Through these two implements of inventory control, management is provided with a sounder foundation upon which to construct future policy. The preparation and use of the inventory and exposure report serve to identify risk and establish a basis for management decisions with respect to inventory within the limits of risk believed affordable. Supplementing this report, the inventory par report provides a comparison of the present inventory position against a par based on those broad policies for each major item, group or class of inventory. Through this comparison, we obtain a clear indication of how well the specific controls now in force have been functioning.

The ultimate aim of these two reports and the action they generate is the abatement of risk from price declines and the reduction of inventory, commensurate with the reasonable operation of the business. Attendant on these goals is the freeing of space through smaller inventories and the minimization of investment of funds employed.

Design for Conversion to Full Costs by a Publishing Company

by THOMAS P. MORRIS

THIS PAPER DESCRIBES the results of a study of a major publishing house in its consideration of converting from a direct to a full costing system. During the period when we were concerned with few products, direct costs gave us the information needed. However, along with the expansion of the company, we found there had to be better control over operational costs as well as more complete information for management decisions on pricing of individual jobs. We wanted procedures designed to report deviations from over-all company objectives at each level of executive responsibility. To achieve this goal, we looked to full costing.

Full Costing Provides More Complete Information

Application of the full cost concept meant to us primarily that the overhead costs be charged to individual jobs to reflect the total cost of the final product.

The use of full costing results in the reporting of substantially more complete information for controlling operations by giving management the opportunity to evaluate performance better and make decisions in the following areas: competitive position of the company, profitability of pricing decisions, cost of use of printing facilities, direction of promotional effort and effect of volume on costs. The evaluation of these factors, based upon the accurate computation of costs and the results of operations, will provide executive management with information that is presently unavailable in usable form and permit decision-making to correct adverse conditions that affect the over-all operation of the company.

The reports at various levels of responsibility are segments of the overall results of operation and the operating statement is a summary of performance in each area of responsibility. By the utilization of one integrated reporting structure, the performance of each member of the management group will be reported to show the effect of the performance on over-all company objectives.

THOMAS P. MORRIS, Des Moines Chapter, 1951, is Assistant Controller, Delavan Manufacturing Company, West Des Moines, Iowa. Prior to joining his present company in 1959, he was Chief Accountant, Meredith Publishing Company, Des Moines, Iowa, with which company he was associated for twelve years. Mr. Morris is a previous contributor to the *Bulletin*.

In addition to providing a means of evaluating performance, reports designed to reflect performance at all levels of responsibility increase cost control throughout the company. This method of reporting pushes the responsibility for costs down the line and creates cost consciousness at the lowest supervisory levels. Here adverse situations can be observed as they occur and corrective action started immediately rather than after the effect has been summarized into reports at higher management levels.

Major Adaptations in Cost Accounting Practices

The proposed conversion contemplates several changes in our present cost accounting practices. The major changes are:

1. Accumulate overhead costs by responsibility and eliminate allocation of overhead charges through monthly journal entries.
2. Segregate production cost centers to permit a more accurate distribution of charges to jobs, based upon work performed.
3. Install flexible budgeting procedures to provide realistic expense control integrated with financial reporting.
4. Develop cost estimating procedures to provide cost measurement and control over nonstandard jobs.
5. Assign responsibility for cost elements to the management level where the cost can be most effectively controlled.

The mechanics of the proposed full cost system can be divided into seven basic steps:

1. Allocation of overhead.
2. Setting cost center rates.
3. Setting standards.
4. Budget procedures.
5. Accumulation of results of operations.
6. Preparation of closing entries.
7. Statement preparation.

Allocation of Overhead; Setting Cost Center Rates

The first step in the allocation of overhead (including service department costs) is to establish an annual expense budget for all departments and expense objects because the budgeted overhead expenses will be allocated to the production departments. It may appear that service expenses should be allocated first to service departments and then to production departments. This step can be eliminated because the differences in the resulting charges to job orders are usually insignificant. All overhead and service costs will be allocated directly to production departments.

Suggested Basis for Allocation of Overhead Charges

	Report
Fixed overhead:	
Building depreciation	Space occupied
Insurance	Space occupied
Property tax	Space occupied
Depreciation - machinery and equipment	Depreciation recorded on asset record cards
Rent - warehouse	Direct to responsible department
General overhead:	
Heat	Space occupied
Light	Space occupied
Water - general production	Manpower budget
	Meter (estimates checked by meter)
Power	Meter and horsepower requirements
Machine rental	Estimated usage by volume
Spending departments:	
Plant engineer	Maintenance and repair budget
Building stock	Direct to using departments
Custodial	Space occupied
Medical	Manpower budget
Cafeteria	Manpower budget
Personnel	Manpower budget
Industrial relations	Manpower budget
Costing	Estimates of activity (number of orders processed)
Mechanical research	Estimated ratio of effort (projects budgeted)
Mechanical engineering	Estimated ratio of effort (projects budgeted)
Standards section	Estimated ratio of effort (projects budgeted)
Production control	Budgeted production hours
Receiving	Estimated allocation to departments benefited
Plant administration	Manpower budget
Paper stock	Budgeted paper usage
Traffic	Direct to mail room
Book stock	Direct to book assembly

EXHIBIT 1

There are many possible methods of allocating overhead to production departments. Our suggested basis is shown in Exhibit 1. We feel that any method used should be thoroughly evaluated and then consistently applied.

Once the budgeted expenses have been allocated to the production department, the departmental cost center rates can be established. Exhibit 2 illustrates the steps for computing cost center rates:

1. Budget expenses by cost center or general department.
2. Budget production hours by cost center.
3. General departmental expenses allocation to cost center, based on production hours.
4. Cost center rate computed by dividing total expenses by budgeted production hours.

Example of Determination of Cost Center Rates

Department A Controllable	Total budget	Cost center #1	Cost center #2	Cost center #3	Miscellaneous operations	General department
Production labor	$125,000	25,000	60,000	20,000	20,000	-
Miscellaneous labor	25,000	3,000	7,000	5,000	3,000	7,000
Supervision	20,000	-	-	-	-	20,000
Supplies	34,000	7,000	12,000	3,000	2,000	10,000
Utilities	5,000	3,000	2,000	-	-	-
Repairs	15,000	4,000	9,000	2,000	-	-
Noncontrollable						
Machine depreciation	75,000	30,000	40,000	5,000	-	-
Building depreciation	125,000	30,000	60,000	10,000	25,000	-
Insurance	15,000	4,000	7,000	2,000	2,000	-
Property taxes	22,000	6,000	11,000	3,000	2,000	-
Service departments	35,000	-	-	-	-	35,000
	$496,000	112,000	208,000	50,000	54,000	72,000
Budget production hours 2 shifts	4,000	1,000	1,600	800	600	
Percentage of total production hours	100%	25	40	20	15	
Direct expenses	$496,000	112,000	208,000	50,000	54,000	72,000
Allocated general department overhead	-	18,000	28,800	14,400	10,800	(72,000)
	$496,000	130,000	236,800	64,400	64,800	-
Cost center rate per hour		$130.00	148.00	80.50	108.00	

		Proof
1,000	@ $130.00	$130,000
1,600	148.00	236,800
800	80.50	64,400
600	108.00	64,800
4,000		$496,000

Figures are for illustrative purposes only and are not intended to be representative of any one department.

EXHIBIT 2

Setting Standards

It was determined that each unit of production will be set in terms of hours per unit of production. Set-up or make-ready time also will be stated in terms of hours per setup. The standard data record will show the standard units per hour by operation and the reciprocal or standard hours per unit of production.

Costs will be applied to the standard hours at the cost center rate to determine the total standard cost, as illustrated in the example:

Assume: Set-up time—1 hour
Running time per M copies—30 minutes
Run in cost center #1 (Exhibit 2) at a rate of $130 per hour.
Standard cost—10 M copies:

1 hour make ready @ $130	$130.00
5 hours running time @ $130	650.00
Total cost 10 M copies	$780.00

Budget Procedures

Over-all company budgets will be prepared for the year's operation based on expected monthly volumes. This will be the standard or planned budget and will also serve as basis for establishing cost center rates. Monthly production volumes will deviate from the planned budget, and expense control should be geared to the actual production levels. The proposed budget procedure contemplates the issuing of short-range monthly expense budgets based on the expected level of operation fifteen days prior to the start of the budget month. The department supervisors will be expected to gear expenditures to this budget and will be held responsible for controllable deviations from the budget. Issuing the budgets prior to the start of the activity will permit the supervisors to make plans for increasing or decreasing expenditures as provided in the budget (Exhibit 3).

In the presentation of the financial reports, the difference between the actual and planned or standard budget will indicate the departmental volume variance and the difference between the actual expenditures and the flexible budget will indicate the spending or controllable variance.

Accumulation of Results; Closing Entries; Statements

The operating results will be accumulated in accounts that facilitate the preparation of closing entries and minimize the number of closing entries required. As costs are reported, they will be accumulated by job order number, the total of all jobs in process to be controlled by the work-in-process control account. The work-in-process detail will be maintained in files of tabulating cards and the accumulated costs summarized by department or product as desired.

The closing entries required to record the results of operations into the accounts are illustrated in Exhibit 4.

Departmental Monthly Budget

For the month of _____

Press room	Current month: Number of people	Current month: Hours	Current month: Amount	Next month: Number of people	Next month: Hours	Next month: Amount
Controllable expenses:						
Production payroll:						
Pressmen			$			$
Stacker boys						
etc.						
etc.						
			____			____
Total production payroll			____			____
Miscellaneous labor:						
Supervision						
Training						
No work						
Material handling						
Clean up						
Overtime						
			____			____
Total miscellaneous labor			____			____
Total labor			____			____
Supplies						
Service of other departments						
Maintenance						
			____			____
Total controllable expenses			____			____
Noncontrollable expenses:						
Social security						
Payroll taxes						
Utilities						
Equipment rental						
Depreciation of machinery						
Other rentals						
Work for others (cr.)						
Expense recovery (cr.)						
			____			____
Total noncontrollable expenses			____			____
Total budget			$____			$____

EXHIBIT 3

This cost system has been designed to facilitate the preparation of statements. All the statements illustrated in this report can be prepared from the trial balance, underlying statements, or the closing journal entries as shown on Exhibit 5.

The budget data required for the statements can be obtained from the original budget data and placed on the statements well in advance of closings.

Examples of Closing Entries

Journal Entries

	Dr.	Cr.
(1) Materials Purchases (Voucher Register)		
Inventories - Stock	x	
Price Variance	x	
Accounts Payable		x
(2) Expense and Other Purchases (Voucher Register)		
Expense Control	x	
Prepaids	x	
Accounts Payable		x
(3) Payroll Distribution		
Expense Control	x	
Accrued Payroll		x
(4) Expense Transfers between Departments		
Expense Control	x	
Expense Control		x
(5) Production Materials Requisitions		
Work in Process	x	
Usage Variance	x	
Inventories - Stock		x
(6) Cost Absorbed by Production:		
Work in Process	x	
Performance Variance	x	
Expense Absorbed		x
(7) Expense Recording of Prepaids, Depreciation, etc.		
Expense Control	x	
Prepaids		x
Reserve for Depreciation		x
(8) Nonstandard Methods Authorized		
Variance	x	
Work in Process		x
(9) Parent Company Service Charges		
Expense Control	x	
Other Expense	x	
Parent Company - Payable		x
(10) Cost of Sales Entry		
Cost of Sales	x	
Work in Process		x
(11) Sales Entry		
Accounts Receivable	x	
Sales		x

Trial Balance

	Dr.	Cr.
Cash		
Accounts Receivable	(11)	
Inventories - Stock	(1)	(5)
Work in Process	(5) (6)	(8) (10)
Fixed Assets		
Depreciation Reserve		(7)
Prepaids	(2)	(7)
Accounts Payable		(1) (2)
Accrued Payroll		(3)
Other Liabilities		(9)
Net Worth		
Sales		(11)
Cost of Sales @ Standard or Job	(10)	
Variances:		
Material Price	(1)	
Material Usage	(5)	
Nonstandard Routing	(8)	
Performance	(6)	
Expense Control (2) (3) (4) (7)	(9)	(4)
Expense Absorbed		(6)
Other Expenses and Income	(9)	

EXHIBIT 4

	Statement	Source of data
V-10(c)	Departmental expense report	Trial balance of expense subsidiary ledgers
	Schedule of expense control and spending variances for:	Trial balance of expense control accounts
V-10(b)	Production departments	
V-11	Production services	
V-12	Engineering staff	
V-13	General services	
V-10(a)	Schedule of expense control and spending variances by major responsibility	Totals of schedules V-10(b), V-11, V-12 and V-13
V-15	Schedule of time saved or lost in production	Tabulated summary of work performed by department used to prepare journal entry 6
V-14	Schedule of effect of volume of work	Trial balance of cost absorbed accounts
V-9	Analysis of Production variations	Totals of schedules V-10(a), V-11, and V-12
V-8	Analysis of variations	Schedule V-8 and trial balance of variance accounts and/or journal entries 1, 5, 8
V-7	Analysis of standard gross profit	Trial balance of sales and standard cost of sales accounts
V-6	Operating statement	Totals of statements V-7 and V-8 and trial balance of other expense accounts

EXHIBIT 5

Analysis of Publication Cost

Exhibit 6 illustrates the information that can be gathered to analyze the cost of each publication. This can be accomplished by analysis of the figures making up the operating statement and the completed job orders. All of the standard production costs will be segregated by publications and the following variances can thus be segregated in the same way:

Publication Cost Analysis Work Sheet

	Total	Un-allocable	Magazine No. 1	Magazine No. 2	Books (by title)	Other inter-company jobs	Other job printing	Source of distribution to products
Net sales	x		x	x	x	x	x	Sales invoices
Cost of sales - standard or job	x		x	x	x	x	x	Job cost summary
Gross profit at standard	x		x	x	x	x	x	
Cost of variations due to:								
Purchase price - paper	x		x	x	x	x	x	Distribution to accounts from vendor's invoice
Other materials	x	x						
Freight on cores	x		x	x			x	Freight invoices charged to accounts
Excess waste	x		x	x	x	x	x	Requisitions compared to job standards or estimate
Base weight	x		x					Computed and deducted from waste
Nonstandard weights:								
Press	x		x	x	x		x	Job cost summary
Job press						x	x	
Others	x		x	x	x	x	x	
Spending variances	x	x						Cannot be associated with individual jobs
Volume variances (1)	x	x						Cannot be associated with individual jobs
Performance	x		x	x	x	x	x	Job cost summary
Total variances	xx	xx	xx	xx	xx	xx	xx	
Total contribution	xx	xx	xx	xx	xx	xx	xx	

(1) Can be partially allocated due to difference in size of publications.

Other items making up the profit and loss and the unallocable variances can be distributed by product.

EXHIBIT 6

Purchase price—paper	Nonstandard methods
Freight on cores	Volume (change in size of publication)
Excess waste	Performance
Base weight	

Other variances can, at best, be arbitrarily allocated to the publications. The analysis of publication or job order costs showing the detail of paper costs and cost by operations will be obtained from summaries of closed job orders.

Comparison to Present Procedures

The primary objective of the proposed accounting plan is the accumulation and timely presentation of cost control data. Our present procedure do this to a good extent but they are complicated by recording in the accounts what is in reality a statistical analysis of publication costs. The present accounting routines are complicated by many allocations and closings that are required to allocate all costs to publications for statement presentation. The proposed procedures are designed to produce cost control data and provide for the statistical analysis of publication costs separately from accounting routines. The resulting

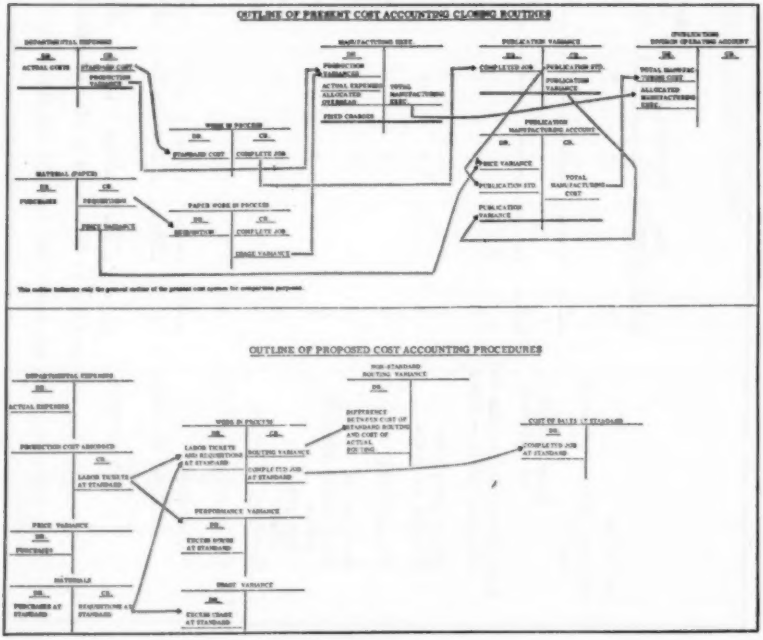

EXHIBIT 7

simplification of accounting procedures is illustrated in Exhibit 7, which compares the flow of figures of the two procedures. The proposed procedures are simplified by:

1. Eliminating allocations of overhead costs.
2. Providing for accumulation of publication costs in job cost records rather than in ledgers.
3. Eliminating allocation of variances.

While these procedures are designed for the printing company, the application of the same principle to other companies is practical.

Property Insurance and Its Cost

by J. H. PFLIEGER, JR.*

IT IS THE POLICY of businesses to eliminate economically the risk of loss through fire and other like hazards. Today, business managers agree and accountants acknowledge that the responsibility for assuring that a company's property is adequately insured at a minimum cost against loss through fire and the elements, comes under the jurisdiction of accounting. In reviewing the current literature on this subject, this writer feels that not enough attention has been given to this accounting responsibility during the inflationary period which we have encountered in the 1950's. A review of the topical index of *N.A.A. Bulletins,* since 1953, reveals that only two articles have been published in the last six years on this subject.

Mr. Arthur J. Benjamin, in his article, "How to Get Reproduction Cost New, less Depreciation" in the May 1954 issue of the *Bulletin* presented the case of revaluation of property values by use of indices in order to arrive at insurable values. Mr. Benjamin's forte for the use of indices applied to accounting records is that the method is simple and inexpensive. In rebuttal, Mr. Ralph L. Berry, in his article, "What is Needed to Establish Reproduction Costs New?", in the September 1954 issue of the *Bulletin,* points out the inadequacies of indices and highlights the known advantages of independent appraisal reports for recovery of loss. Mr. Berry's contention is valid when he states that inaccuracies in original booked figures, as compared to original factual values, are magnified by the use of indices. Furthermore, he points out that individual

* Controller, Radio Corporation of America Laboratories, Princeton, N. J.

characteristics of specified properties may vary greatly from the data used in the formula in arriving at the index number. Mr. Berry acknowledges the expense of unbiased independent appraisals but he plays down the expense of keeping the appraisals up to date.

Neither author gives cognizance to the use of appraisals by insurance companies, coupled with use of the assured's records converted to present-day values through the use of indices. It would appear that the complete subject of valuation of property has not been covered in either article. Neither has the subject of the cost of self-insurance as compared to regular insurance been examined. Consideration has not been given to self-insuring on a selective basis or in co-insuring, if it can be done more economically. Moreover, the problem of arriving at the adjusted depreciation allowance, in the light of the 1954 Revenue Code, has not been covered in recent literature to the best of this writer's knowledge. Naturally, where accelerated depreciation is being taken for tax and book purposes, significant errors can be made in applying indices indiscriminately to compute depreciation for insurance purposes. Certainly, the problems inherent in determining reproduction costs new are much less severe than the problems encountered in ascertaining equitable depreciation allowances in arriving at the so-called actual cash value, as used in the insurance industry.

Both authors recognize the principle of excluding certain elements of property from the insurable values. It is generally accepted that such items as land, underground piping, grading, excavation costs and underground foundations should be excluded from insurable values. However, with the advent of split-level and modern construction, it is most difficult to arrive at construction costs applicable to specific exclusions in many cases. These factors are being computed every day by thousands and thousands of businesses, and it certainly would seem that more specific criteria could be established than have been set forth heretofore in accounting literature.

The accountant should, certainly, be conscious of the current expense of property insurance on both plant and equipment. In most fabricating companies, fixed assets represent at least 25 percent of the total assets. In the oil industry, fixed assets can account for 75 percent of the total assets. Insurance is a specialized and involved industry and certainly a good insurance adviser is most desirable, but premium expense must be recovered in the sales price of the businesses' products and the subject deserves more consideration than has been manifest to date.

Accounting and Operations Research — Example of a Problem in Marketing Channels

by FRANZ EDELMAN

JUST ABOUT EVERY PROJECT which our operations research group has been asked to handle has brought us into close contact with accounting and financial operations. This article might be looked upon as an outsider's view on the accounting art—an outsider whose primary concern is the analysis of basic management problems in a rapidly changing atmosphere. To endow it with reality by means of the description of a case study, I have chosen a particular application which exhibits to an extremely high degree the interaction between finance and the remainder of the business. I hope that beside the criticism of accounting, implied in the reporting of this case study, the reader will find also a number of constructive suggestions which, I am sure, will be considered in the spirit in which they are given. They are prompted by the desire to attain mutual understanding and cooperation between accounting and all the other industrial functions.

There appears to be at least one advantage of being an outsider, that is, a non-expert in a given discipline, namely, that a certain amount of ignorance is almost desirable in order to think about and work on a problem without too many preconceived notions. There are also, of course, several severe disadvantages of being a novice and some of them will undoubtedly become apparent during the course of my presentation.

What Operations Research Is Not — and What It Is

Let me begin by giving a little bit of background on operations research itself—how it began, what it is supposed to be doing and what, in my opinion, it has been doing during the last decade. Operations research had its origin in the military, where it played a vital part in the successful pursuit of the cause of the allied nations. Shortly after the end of the war, similarities began to be noticed between the problems confronting a war machine on the one

FRANZ EDELMAN is Operations Research Analyst with Radio Corporation of America, Princeton, N. J. Previously, he was an Engineer and Mathematician with the same company, which he joined in 1950. Before that, Mr. Edelman was Research Assistant at Brown University, Providence, R. I. He was graduated from McGill University, Montreal, Canada, and later obtained M.S. and Ph.D. degrees in Applied Mathematics from Brown University, Providence, R. I. The case study discussed in this paper was developed and carried out in partnership with Dr. H. N. Garber of the R. C. A. Operations Research Staff.

hand with those confronting a competing business enterprise on the other. Consequently, in the late 1940's, commercial or industrial operations research began to develop in this country and in many of the European countries. Since that time a great deal of ill-conceived publicity has accompanied the popularization of operations research in industry. This publicity, and a great deal of it has been due to operations research itself, has created in the minds of managers certain impressions which, to my mind, are definitely erroneous. Let me enumerate a few of these. It has been hinted and sometimes almost stated outright that operations research is really a sort of substitute for management. On a somewhat broader basis, it has been implied that operations research is endowed with a responsibility towards decision-making. Many readers of newspaper or magazine articles probably have had the impression that operations research is somehow equivalent to or associated with automation, mechanization or electronic data-processing. The emphasis on the techniques of operations research, which are mostly mathematical, has been such that by now the uninitiated and, I am afraid, a good many of the practitioners, consider operations research merely as a collection of standard techniques.

Just to clear the air, let me state categorically that none of the notions just mentioned could be further from the truth. In fact, operations research is nothing more than a scientific approach toward providing executive departments with a quantitative basis for making decisions. The key phrases in this broad, definition-like statement are: scientific approach (relating to the techniques which must be developed) and quantitative (relating to the fact that the information is furnished to executives in the form of numbers rather than qualitative declarations). There is another and extremely important implication to be taken from the phrase, scientific approach. This is that the true purpose of operations research is embodied in the search for a fundamental structure on which to build what might indeed be called a management science. When we begin to comprehend some of the fundamental relationships which exist in management science, we can speak more intelligently about management objectives, significant measurements of a business and its various corporate activities, and meaningful, non-intuitive decision-making.

The significance of such an approach becomes all the more apparent because it represents a trend which has become very clear in the general area of business administration. This can be expressed simply by saying that management by experience and intuition alone is being slowly but surely displaced with management by experience and science. It is very clear that science without experience is of very little practical use, if any. It is also becoming equally apparent, however, that experience without science has ceased to be adequate

in an atmosphere of ever-increasing competition, of shrinking profit margins and of increasingly heavier demands for higher efficiency. It is, therefore, necessary that both experience and science work together.

Waiting on the Behavioral Sciences

The most critical unit in the man-machine system, with which management science is to concern itself, is the human being. It is my opinion that the major contributions of operations research will probably not be realized until the behavioral sciences tell us more about the human being and his interaction with his environment in the industrial system. There seems to be every indication that such progress in the behavioral sciences is being and will continue to be made, and that the new environment in management is here to stay.

Initial Analysis of Distribution Channels

The accounting department is in a very real sense the main artery through which information flows to management for the purpose of planning and controlling and, after all, the two major functions of management are to plan and to control. In our study, we were, therefore, confronted, at first, with determining the information content of the accounting data which formed the primary input. The second theme to be developed here is concerned with the ability of management to set an objective and to measure the performance of the operations relative to that objective. It is, of course, axiomatic that both interact heavily because one can neither set an objective nor measure performance unless one has a fairly well-defined frame of reference. It is this frame of reference which must be constructed on the basis of accounting data and which is, therefore, the responsibility of the accounting department.

The problem covered by the study can be stated briefly. One of our managers, with profit and loss responsibility for his activity, was interested in planning the strength and distribution of his sales force according to some criterion which he had not yet fully defined to himself. Let me describe to you what the salient features of his business are. His sales organization deals with three distinct distribution channels. The distribution channels differ in three respects: each has its own average discount rate, its own commission structure for its salesmen and, finally, the effectiveness of a salesman, that is, the amount of business which he can generate, differs from one distribution channel to the next. The problem was, therefore, twofold. First, how to measure the performance of each distribution channel and compare it with the performances

of the other two. Secondly, how to plan for the operation as a whole in terms of sales effort distribution.

STANDARD ACCOUNTING				
	A(5%)	B(17%)	C(30%)	TOTAL
NET SALES PER SALESMAN	150	750	450	—
NUMBER OF SALESMEN	40	2	1	43
NET SALES(LIST SALES)	6000(6316)	1500(1807)	450(643)	7950(8766)
MFG. & ENGR. COSTS (LIST SALES)	4035	1155	411	5601
% GROSS MARGIN	32.8	23.0	8.7	29.5
HOME OFFICE & SELLING (NET SALES)	869	218	65	1152
CORP. ASSESSMENT (5 % OF NET SALES)	300	75	23	398
PROFIT	796	52	-49	799
% TO NET SALES	13.3	3.5	-10.9	10.1
PROFIT PER SALESMAN	20	26	-49	18
DISCOUNTED PROFIT PER SALESMAN	19	22	-70	16

EXHIBIT 1

The first item of information which we developed for discussion was a report describing the financial properties of the business and the distribution channels individually (Exhibit 1). Looking down the column headed "Total," it appears that the business as a whole is a fairly normal one, yielding some ten percent on net sales. Also, the average undiscounted profit per salesman is about $18,000 per year, paying for his salary and commission with some left over for the company. The first three columns refer to the three distribution channels: Channel A with a 5% discount as standard procedure, Channel B giving 17%, Channel C 30%. The net sales per salesman (line 1) gives simply the potential of a salesman in the particular distribution channel. It is, in other words, the salesman's effectiveness. The net sales volume generated (line 3) also shows, in parentheses, list sales. Next we find manufacturing and engineering costs per cent gross margin, which is net sales less these two costs divided by net sales. Since the $26,000 of a 17%-discount salesman, for example, are worth less in proportion than the $20,000 of a 5%-discount salesman, we discount the profit (last line of Exhibit 1) by the respective percent discounts.

Now, let us look at the distribution channels. The first impression is that Channel C looks like a sure money loser. In fact, it takes better than three salesmen in Channel B to liquidate each salesman in Channel C. Let us now make a comparison between Channels A and B. On the basis of profit per salesman, there is very little to choose between the two. However, on the basis of percent profit to net sales, it seems that Channel A is almost four times as effective as Channel B. This would indicate to us to put heavy emphasis on Channel A. You will notice that this has indeed been the information which had previously been extracted from this type of statement.

Fortunately, we were so ignorant that we were unwilling to take even such conclusive evidence for granted. Instead, we began asking questions as to the origin and manner of compilation of the figures before us. We asked the manager, with whom we were discussing these numbers at the time, just where his salary showed up in this tabulation. He did not appear to be particularly disturbed by this question and answered that this is part of the home office expense. We then asked him whether he really spent his time more or less in the proportion of liquidation of home office costs. This question was answered with "I do not know. I have never really watched it." We then went down the list item by item and, to make a long story short, we arrived at a set of costs which, for the purpose of this analysis, may be called undistributable rather than fixed costs, because not all fixed costs are undistributable nor are all undistributable costs fixed.

"Silent Partner" Costs — and a New Analysis

Exhibit 2 (column "Silent Partner") shows the state of affairs after the undistributable costs have been separated and tabulated. The adopted terminology is somewhat facetious but adequate. Namely, for the purpose of evaluating and comparing the three actual distribution channels and for the purpose of subsequent planning for those distribution channels, the Silent Partner will have to be considered an activity within its own right. As such, it constitutes the manager's risk, equivalent to an additional distribution channel having costs but no sales. In short, our main point is that any valid conclusions which can be drawn from such an accounting statement must be drawn before the Silent Partner is liquidated. I point out that the figures for profit per salesman, percent to net sales and profit itself, are now quite fictitious in the absolute sense. However, they do describe the comparison among the three activities. That is, they are meaningful in the relative sense and this, after all, was the very purpose of the analysis. In brief, on the basis of percent to net

sales Channel B is best, followed immediately by Channel A, with Channel C a relatively poor third. On the basis of profit per salesman, however, Channel B is the overwhelming favorite, whereas Channel C is ahead of A by quite a comfortable margin.

SEPARATION OF UNDISTRIBUTABLE COSTS					
	A(5%)	B(17%)	C(30%)	SILENT PARTNER	TOTAL
NET SALES PER SALESMAN	150	750	450	—	—
NUMBER OF SALESMEN	40	2	1	0	43
NET SALES	6000	1500	450	0	7950
MFG. & ENGR. COSTS	2813	803	285	1700	5601
% GROSS MARGIN	53.1	46.5	36.7	-∞	29.5
HOME OFFICE & SELLING	681	54	17	400	1152
CORP. ASSESSMENT (5 % OF NET SALES)	300	75	23	0	398
PROFIT	2206	568	125	-2100	799
% TO NET SALES	36.8	37.9	27.8	-∞	10.1
PROFIT PER SALESMAN	55	284	125	-∞	18
DISCOUNTED PROFIT PER SALESMAN	52	236	88	-∞	16

EXHIBIT 2

Now, to complete the cycle, when it was agreed that measurement and planning should be done on a basis such as the one just described, the question arose as to how to liquidate the Silent Partner. The immediate superior of the manager wants to see, at the end of the year, a semi-consolidated report in which all costs are liquidated in some fashion. It was at this point that we asked the manager what his objective was in running his business. It happened that at that time it was corporate policy that managers who have profit and loss responsibility be required to return 10 percent on net sales. In order to introduce no bias, our criterion was, therefore, to return 10 percent in each of the three distribution channels and then maximize the total dollar profits over and above 10 percent. As is shown in Exhibit 3, the business as a whole returned very slightly over 10 percent. The top half of this table is just a recapitulation of the essential information in the previous table with the following additional items (1) the minimum profit to be made in each distribution channel, namely 10 percent of net sales, (2) the excess profit above the minimum profit and

RE-DISTRIBUTION OF UNDISTIBUTABLE COSTS					
	A(5%)	B(17%)	C(30%)	SILENT PARTNER	TOTAL
NET SALES	6000	1500	450	—	7950
PROFIT	2206	568	125	-2100	799
MIN. PROFIT	600	150	45	—	795
EXCESS PROFIT	1606	418	80	-2100	4
% LIQUIDATION	76.3	19.9	3.8		100
AFTER LIQUIDATION					
	A(5%)	B(17%)	C(30%)		TOTAL
PROFIT	604	150	45		799
% TO NET SALES	10.1	10.0	10.0		10.1
PROFIT PER SALESMAN	15	75	45		18
DISCOUNTED PROFIT PER SALESMAN	14	62	32		16

EXHIBIT 3

this, again, before liquidation of the Silent Partner and (3) the liquidation rates for this undistributable cost of 2.1 million dollars in the ratio of the excess profits made in the respective distribution channels. The purpose of this type of liquidation is demonstrated in the lower half of Exhibit 3, which shows that liquidation of the undistributable costs in the proportion of the excess profits yields a 10 percent return on net sales in each of the three distribution channels. This was precisely what the manager required.

From Analysis to Strategy

There is an interesting and important point to be made here. The compilation of the control and planning data, that is, the separation of the undistributable costs, shown in Exhibit 2, is almost entirely a matter of cold, impersonal analysis and does not really involve the manager's personal feelings for and demands of his business. The liquidation of the undistributable costs, however, is subject entirely to management attitudes and is, therefore, arbitrary and often capricious. Hence, it is little wonder that consolidated accounting reports are inadequate for measuring and planning purposes, since measuring and planning must ultimately deal with real-world situations rather than the internal philosophies of a business enterprise.

Based on the measurement scheme outlined and on the planning criterion described, namely, maximized profit dollars over and above a minimum return on sales, we constructed a computer model for the sales operation. The initial stage of this model was, of course, a very rudimentary abstraction of the real-life situation. Therefore, the results predicted by the model were, strictly speaking, only first approximations or perhaps were useful only to indicate certain trends, one of those trends being that more emphasis should be placed on distribution Channels B and C.

The basis for the computer model was the objective function of maximizing dollar profits above 10 percent return on sales. We attempted then to develop a marketing strategy consistent with this objective as well as appropriate for our particular position in the market. A partial result, the relationship between the management objective and marketing strategy, is shown on Exhibit 4. The managerial objective is represented by the minimum percent return on sales and is plotted along the horizontal axis. The marketing strategy is represented by the fraction of total salesmen employed in any one of the distribution channels and is plotted along the vertical axis.

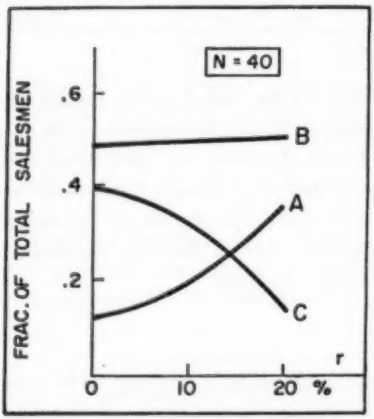

EXHIBIT 4

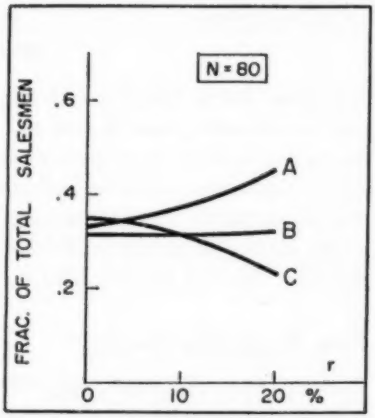

EXHIBIT 5

Two significant facts can be noticed. First, with the present strength of the sales force, that is 40 salesmen, Channel B provides the basic coverage of the market. The results show that approximately half of the salesmen should operate through Channel B and that this fraction is almost independent of the management objective. Second, the balance between Channel A and C, however, is shown to be very sensitive to the management objective. Referring to Exhibit 2, we can notice that on the basis of percent to net sales Channel A is

considerably more effective than Channel C. On the other hand, on the basis of profit per salesman Channel C is far more profitable than Channel A. This implies that, if the management objective leans heavily toward emphasizing return on sales, Channel A should have a larger fraction of the sales force. Conversely, if management objective is more concerned with dollar profits (concern with dollars profits is equivalent to a zero minimum guaranteed return on sales), then Channel C should employ a larger fraction of the salesmen. This is the relationship which is shown on this chart.

The other aspect of marketing strategy is concerned with market position. Here we are confronted with some apparently contradictory facts. Our main competitor, who holds 50 to 60 percent of the total market, has always adopted the strategy of working almost exclusively through Channel A. On the other hand, our second competitor, with 25 percent of the market, utilized Channel B almost exclusively. We, therefore, wished to investigate why it should be appropriate for the leading contender in a market to use a strategy which is so different from that of its competitors with relatively smaller shares. The trends which were pointed out by the preliminary analysis indicated that there must be some rational basis for arriving at this difference. Consequently, we hypothesized a sales force of twice our current strength, 80 salesmen in all, and analyzed this hypothetical situation with our model. The corresponding result of this new situation (Exhibit 5) shows that the coverage via Channel B is still insensitive to the management objective but that it is considerably smaller, compared to A and C. The strategy concerning the balance between Channels A and C, as a function of management objective, remains basically unchanged, except that A has gained in importance over C. A comparison between Exhibit 4 and Exhibit 5 shows quite clearly the effect of market position on market strategy in this particular case.

It was at this point that the management of this operation and we ourselves began to get some insight into this very basic problem of competitive strategy. This produced a degree of confidence which ultimately led to acceptance of the results by the management. It is also very significant that it was possible to gain this insight by means of a simple and unsophisticated analysis.

Based on this simple model and some of its conclusions, a more elaborate analysis of the situation was then undertaken. This went as far as defining and laying out sales territories and the determination of an optimum strategy for the assignment of salesmen in each distribution channel by sales territory. The results of this analysis produced recommendations which were implemented some months ago and which, as far as we can tell, have been verified by information from the field. Nevertheless, our work in this project is not really

finished. The situation is a highly dynamic one, as in most management projects. If the analysis is to have continued validity, it will be necessary to keep up to date and refine the model as we go along. In that way we shall ultimately have a powerful planning and measuring device for the operation.

Meeting the Requirements of a New Environment

The continued use of this management tool is possible only through some fairly radical changes in accounting procedures or, at least, in the reporting of accounting data. Yet, we have not fully succeeded in convincing the accounting department to modify permanently its reporting procedures. This is primarily so because the department which is responsible for the accounting to this particular manager is part of the divisional superstructure and so does not report to the manager.

This example is meant to demonstrate more than just the possibility that an accounting report can, unfortunately, be instrumental in persuading a manager to abandon a business with high profit potential in favor of one with a relatively lower one. What we hope it does demonstrate is the necessity to re-examine the true function and purpose of the financial activity in its relationship to management planning and control. It has been our experience that the controller is often the Number 2 man in the organization hierarchy of decision-making. This, of course, makes his role all the more important. In the broadest sense, the control and planning functions of management can be performed only on the basis of accounting data which reflect the true relative position of an operation among other operations. Only when the significant control and planning data have been assembled, should the problem of the overall consolidated report enter into the picture.

To sum up, we have tried to give a realistic and critical appraisal of accounting as we, in operations research, have found it. If generalized unduly, it is only because our contact with accounting has been restricted to just a few groups and all those within the same company. Accounting is to be considered a dynamic art. Therefore, accountants should examine and re-examine the ever-changing, functional relationships which can be their only reliable guide to meaningful information and acquaint themselves with at least that portion of the rapidly developing management science which is basic to their own activities. In other words, they need to adapt their thinking and methodology not only to the particular business within which they operate but also to the changing environment, both material and conceptual. Then and only then will management be able to deal effectively with its continually more complex problems.

Recent Trends and Tools in Financial Management

by H. M. STILLER

IN DISCUSSING recent trends in financial management, definitions are appropriate at the outset. The term, management, refers to the direction, administration and control of business enterprises which produce goods and/or services for use in an economic society. For purposes of simplicity, management, like all Gaul, may be divided into three parts—production, marketing and finance. Financial management may be said to be concerned principally with the functions of planning, control and evaluation of production and marketing performance. The term, trends, suggests general courses or directions of development. The currency of such trends implies that recent tendencies may indicate future or long-run developments. Tools, as a term, is quite concrete. Those which are now applicable to financial management will be dealt with in particular as the article progresses. In discussing financial management and related tools and trends, we cannot encompass in one paper the entire complex field of financial management philosophies or techniques. This exploration will be limited to certain of the more dramatic or interesting current developments.

New Backstops for Old Authority

Before reviewing the latest fashions in concepts and practices of financial management, it may be well to cast a jaundiced eye at those strange flowerings called organization charts. Changes which I have observed recently seem to emphasize the growing staff importance of the "money men" perhaps as a result of the recent recession. Financial vice-presidents are becoming more numerous as decisions based on careful planning assume more importance to the enterprise interested in growth and the improvement of its competitive position. The treasurer is still likely to be tied to the treasury and the controller to control, but the financial vice-president, who may be vice-president *and* treasurer or vice-president *and* controller, is a general officer to reckon with. Many accountants

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H. M. STILLER, Kansas City Chapter, 1949, C.P.A., is a Partner of Arthur Young & Co., Kansas City, with which firm he has been associated for the past fourteen years—in Detroit, New York and Kansas City. Previously, Mr. Stiller was Internal Auditor and Accounting Methods Engineer for Chrysler Corporation and Cudahy Packing Company. He attended New York University and the University of Detroit School of Law.

are filling these posts. More often than not, he is a member or chairman of the executive committee and/or a member of the board of directors. As befits a top management officer, he is supported by a middle management staff of varied financial functions and talents, including economists, statisticians, mathematicians, engineers and accountants.

However, the glamour of a top management job is overshadowed by the pressure and responsibility of coming up with the answers to the challenges of today and tomorrow. Senior financial executives need time and space for thought and action. The deliberative processes involve constant review, measurement, planning and selection. The action responses require the making of decisions timed with accuracy—decisions which in turn will motivate the right people to take the right actions at the right times. The raw material required for these mental processes is furnished by the financial manager's staff, most of it via a feed-back route because of motivation by top management. Certainly, current trends indicate that financial management today must be better oriented to world affairs—the national economy and politics, the long-range potentials of various technologies, the techniques of operations research, analysis, control and evaluation—than in the earlier days of rough-and-tumble "scientific" management. The financial staffs today consist more and more of qualified and, in many cases, professional experts or specialists in some area of management service.

This creates a changed situation. Not too many years ago, the Horatio Alger vignette of office boy to bookkeeper to boss was an accepted version of American business success. It now becomes increasingly evident that many former university faculty members are becoming full-time careerists at corporate middle management levels or on the professional staffs of management consultants and engineers. For example, abilities of the economists may be required for long-range planning, of the mathematician for linear programming, of the statistician for quantitative analysis, of the engineer for operations research, of the accountant for financial reports. These are merely illustrative specialties, of course. In actual practice, there is considerable overlapping. It is not unlikely, for example, that accountants may be possessed of sufficient technical skills to perform the functions of economic planning, linear programming and statistical analysis. Nevertheless, the trend appears clearly to assign such functions to individuals with related broad and intensive training in economics, mathematics and statistics.

Obviously, action or decision-making is the final objective of the well-organized staff. The senior financial executive in business must accept this responsibility, since most businesses recognize the inadequacy and lack of responsibility inherent in group or committee line decisions.

Current Vogue of "Participative" Management

The problems of decision-making naturally give rise to a question of basic management philosophy. Is there a tendency toward centralization or decentralization? There are several answers to that question, one to fit almost every circumstance.

Messrs. Leavitt and Whisler touched on the subject in the November-December 1958 issue of the *Harvard Business Review* ("Management in the 1980's"). They predict that ultimately large industrial organizations will recentralize and that top managers will take on a larger proportion of innovating, planning and other creative functions than at present. They have based their prognostications on an impressive recitation of such new technologies as high-speed electronic data processing, operations research, mathematical programming, analysis and problem-solving, all of which will tend eventually to discount so-called participative, decentralized management. Other observers of the current business scene also believe that the future top management oligarchies will consist of well-trained generalists who will use push-button techniques to obtain decision-making information from staff specialists of "group-think" middle managers.

On the other hand, the numerous corporate acquisitions and mergers of recent years, many of them known technically as poolings of interests, have resulted in the growth of decentralized and participative types of management situations. This must obviously be the case where a large manufacturing corporation expands either vertically through acquisition of supply or market sources or diversifiedly through the acquisition of manufacturing or other enterprises unrelated to its main business. Moreover, a number of large integrated corporations, formerly citadels of strong central direction and control, have decentralized in recent years. They have given their divisions and division managements more autonomy in broad areas of policy and action, probably in recognition of the success of decentralized competitors. Further, if and when data processing technology permits daily, hourly or instantaneous central input and analysis, regardless of the number, complexity or remoteness of the reporting locations, centralized information service need be no bar to decentralization. This may seem radical, visionary and impractical but such things can be done today, and are actually being done in a limited way. The short-run trend definitely indicates a growth of decentralization or participative thought and action by managements at various levels of the pyramid.

The specific management techniques which have come into fashion recently, such as operations research, responsibility accounting, management by exception, return on investment measurement and direct costing will be discussed in this article in contemplation of the tendency toward decentralization. However, it is

my personal belief that the long-run trend will comprise a series of dips and rises tending toward centralization. The present dip or short-run trend toward participative management, seems to result more from the expansive psychology of high productivity, mild inflation and general prosperity than from really new discoveries in management philosophy or technology. Long before Frederick Taylor startled business management into self-consciousness, history witnessed rises and falls of both centralized and participative managements to the extents reflective of the economies of the times.

Inevitably, it seems, mankind is revisited by political and/or economic disaster. When these events occur the old participative organizational structures crumble, there is contraction almost by reflex action and the general economic psychology of caution and uncertainty brings forth again the strong, resolute and intrepid leaders. Central authority becomes dominant and the old "group-think" vanishes into the mists of ineffectiveness. Somewhat parenthetically, it may be said that is disconcerting to observe this capitalistic country currently tending toward participative management, even to the extent where labor unions are potent partners in management, while communist governments—ostensibly governments of, by and for the proletariat—impose central controls and iron discipline over all economic activity.

In short, decentralized, participative management is here to stay—for a while, at least. The top management of the large corporation is becoming a team providing guidance and counsel to the divisional executives, the latter attempt similarly to energize and motivate their subordinates, and so on down the line. This same central management group formerly was dominated by a single individual who confined the broad thinking to that group and who expected his divisional executives to carry out his orders and not give him any back talk. If participative management has done nothing else, it has improved human relations in business substantially!

Financial Reporting Under Decentralization

Decentralization implies the establishment of an autonomous operation in such a way that measurement of results is by standards or objectives rather than by supervision. The measurement of actual performance against planned results is the most important function of management reports at the various levels. This measurement or evaluation of progress provides both controls and bases for future long and short-range planning. The procedures involved are frequently described by the fashionable if somewhat trite label of responsibility accounting. It is a growing practice to place the responsibilities for setting volume or profit targets, planning their accomplishment, performing, controlling

and measuring at various management levels.

Lower levels typically might be at foreman and general foreman levels, where control is maximum and report details most voluminous. It is at this point that management by exception, based on reports, demonstrates its value. At middle management, the plant superintendent or works manager has slightly less direct control but a broader area. Reports to him are more over-all in nature and his counterpart in financial management, usually a plant controller or accountant, participates actively in planning and control as well as in record-keeping for measurement of performance at the three operating levels. Higher in the management pyramid, the group and divisional executives call upon their separate staffs to coordinate the setting of objectives, planning, performing, controlling and measuring. Control is more general, reports of performance are more concise and the contributions of objectives and plans by the lower levels of management are re-examined critically. At the top management tier, a brain-trusting staff digests the reports from the divisions and locations, presents top management usually with extremely brief, significant monthly data—nothing so commonplace as full-scale balance sheets or income statements but, rather, charted volume and profits by divisions and groups, rounded off in thousands, compared with similar budget data, and measured by return on investment.

The more decentralized the corporation, the more pronounced is the growth of the central staffs of managements group-thinkers in keeping with the concept of participative management. Their functions are somewhat akin to that of a military general staff, being concerned with strategy rather than tactics. In short, they supply the means by which top management motivates middle and lower management line and staff to establish targets, plan, perform, control and evaluate. The accountants coordinate the fixed or flexible budgets and actual results and compute or review returns on investment; the engineer studies and plans new methods and procedures; the economist projects and charts in all ranges; the mathematicians and statisticians provide theoretical goals and the programming and measuring devices to attain them. The tendency is growing also for these specialists working as project teams to report to top management for action, and subsequently to provide guidance to and train staff assistance for the lower levels of management.

Financial reports to management, then, are tending to become briefer, more graphic, less frequent, in ascending the executive scale. It is almost a gratuitous statement to mention that timeliness of reports, once the anathema of management, has continued to improve steadily. This improvement is due as much to planning and estimating of results as it is to the adoption of higher speed data-processing equipment and related procedures.

The Underlying Tools: Flexible Budgeting, Direct Costing

It should be appropriate, even in a paper of this general import, to discuss briefly trends in certain specific financial management techniques. The accounting innovations currently receiving wide attention, for example, deal with flexible budgets, direct costing and return on investment. In the field of management engineering, essentially financial in nature, are operations research and linear programming.

Financial management has come to recognize more and more the economic importance of measuring and controlling variables. Essentially, the *flexible budget* provides cost and expense objectives which adjust automatically to actual production levels. This, of course, is distinguished from the fixed budget based on a pre-determined volume of production. The use of flexible budgets, particularly for the smaller work centers where lower and middle levels of management are operating, provides excellent control and evaluation of performance. Like its close relative, direct costs, the flexible budget is not new in concept but only in application as a tool of financial management. It has long been an accepted principle of basic economics that average fixed costs per unit of production decline as production expands, while average variable costs decline to a point, then rise. The flexible budget simply applies these principles to performance standards at various levels of production or activity.

Direct costing is a derivative of the fundamental economic principle which also underlies flexible budgeting. Essentially, direct costing is a method of accounting designed to show quickly and simply the relationship of revenue volume to costs and profits. In order to do this, it is necessary to make a sensible division of costs and expenses into fixed and variable classifications. Fixed expenses, and any portion of semi-variable expenses estimated to be fixed, are considered to be period costs and are not absorbed in the valuation of inventories. The proponents of direct costing believe that the technique is a convenient and efficient planning, controlling and measuring tool for financial management. The proponents of the more generally accepted principle of full or absorption costing argue that all manufacturing costs attach to the products manufactured.

It is not the purpose of this discussion to reconcile these tangent viewpoints. As a matter of fact, each of the principles is well-rooted in economic theory. In the long-run, of course, all costs are variable and are, therefore, product or service costs. This economic law is the basis for absorption costing. However, in the short-run, as for operating cycles of a day, a week, a month or a year, direct costing is particularly effective in relating costs to volume. Actually, many firms effect a compromise between the two principles by continuing absorp-

tion costing for conventional financial statement purposes and applying direct costing techniques for financial management purposes, particularly for break-even charting and related decisions. Reconciliations of costs and profits planned or recorded under the differing procedures, if they are made at all, are concerned essentially with manufacturing burden absorbed in inventories under the conventional absorption costing process, and the resulting fluctuations.

In any event, the adoption of direct costing in some form appears to be growing steadily, if not rapidly. The accounting profession and the Internal Revenue Service have not recognized direct costing as a generally accepted accounting principle for purposes of inventory pricing. It is difficult to say when and if they will. The only pronouncement by the accounting profession on the subject relates to an expression in an Accounting Research Bulletin issued in 1947 by the Committee on Accounting Procedures of the American Institute of Certified Public Accountants that, ". . . the exclusion of all overheads from inventory costs does not constitute an accepted accounting procedure." It can be construed, of course, that variable manufacturing expenses which are included in direct costs are one of the "overheads" referred to. This might seem to let direct costing in the door. Nevertheless, where direct costing has been used in the financial statements of companies audited by certified public accountants, their opinions may take exception, unless the effect on income and assets were considered to be immaterial. On the other hand, there is general agreement that direct costing provides an excellent management tool and that conversion to absorption costing for external financial statements may be accomplished without much difficulty by applying appropriate percentages to direct costs included in inventories.

The Underlying Tools: Return on Investment, Operations Research

Almost everyone realizes that the concept of calculating a return on investment is both ancient and honorable. It is also quite primitive and is performed instinctively by animals of the lower orders. A bird builds a nest in a place protected from sun, rain and wind because to do otherwise would yield a lesser return in safety and comfort. A squirrel invests his autumn energy in hiding nuts and receives the winter return of a full stomach. Nevertheless, this hallowed concept has been hailed in recent years as having provided financial management with a bright and shining new tool. As a matter of fact, men of commerce have used applications of the return on investment theory since the dawn of civilization.

In its modern form, the return-on-investment or return-on-capital-employed

concept is extremely useful for both planning and measuring. Essentially, its application permits the measurement of performance in relation to the cost or other value of assets used for a period of time. This, of course, is the same method by which a canny prospective investor would attempt to appraise overall performance of an enterprise, based on dollar amounts shown in conventional financial statements. For internal measurement purposes, management may assign rational if unorthodox values to the assets employed in a specific situation, such as fixed assets at original cost, depreciated cost or replacement cost. It matters little, as a matter of principle, which values are assigned to capital employed for given performance, provided the comparisons so essential to management are made on a consistent basis.

As a planning tool, application of the concept is particularly useful for evaluating plant expansions, improvements and replacements, equipment additions or replacements, inventory requirements and product pricing. The return concept is one of the working tools for setting profit targets, for arriving at "make-or-buy" decisions, for deciding on new products and the abandonment or alteration of marginal return products.

Also, the number of technical papers on particular facets or applications of the concept have multiplied rapidly in the past two years. Almost all of the writers and researchers on the subject agree that the use of the return on capital employed is growing rapidly as a standard financial management procedure in virtually every phase of commerce and industry.

Operations research, as the term implies, is a "before-the-fact" financial management technique coming into widespread use in the larger and diversified corporations, along with its sister mathematical procedure of linear programming. Operations research personnel are engineers or mathematicians who apply scientific methods to the construction of models of business situations. These mathematical models are simplified but explicit operations or marketing projects described in problem form and projected for varying planned and assumed actual levels of volume and costs for different periods, equated algebraically to give solutions in the form of quantified behavior of the various inter-related factors.

In effect, entire operational systems can be reduced to sets of formulas and manipulated to study the influence of changes in operations, without making the actual experiment of changing the operations, themselves. The results, of course, are only as valid as the information fed into the equations. The problems and objectives must be set up by experienced financial, operations or marketing personnel who can interpret the practical relationships so that they may be reduced correctly to mathematical expressions and equations. Operations research techniques cannot be applied, as a practical matter, to qualitative situations, such

as those involving personnel standards or functions of negotiation. Typical problems which can be analyzed by mathematical techniques relate to product mixes, production scheduling, inventory control and methods of transporting, warehousing and distributing products. Other operations research techniques involve the use of probability. The objective of this method is to minimize uncertainty and maximize profit levels in situations in which demand is unpredictable but susceptible of analysis into a pattern. The method is helpful in determining allocations of certain types of inventories, facilities and personnel.

Operations research does not mean that the decision-makers have reduced their function to pushing buttons for correct answers. Since it is an approach which substitutes analysis for intuition, it appears to be a long step toward a more thorough knowledge by financial management of the world in which it lives.

Linear programming is an applied mathematical technique similar to operations research. Linear models are less versatile than operations research models but are programmed to accomplish the best single solutions to problems which do not involve probability. Usually the technique is applied to finding the best level of business activity for some scarce factor of production. The statement of the problem must contain relationships which are linear, or proportional. Nonlinear or disproportionate relationships cannot be formularized by this process. Linear programming has come into widespread use since the end of the war, particularly in the larger industries where the short-run planning of product mixes for greatest profitability formerly required laborious compilations, computations and, ultimately, the type of guesswork which often masquerades as judgment.

Other Techniques: Economic Analysis, Methods Work

There are significant trends in other areas of financial management, such as those involving the use of economic tools. Large industries the managements of which feel a heavy weight of responsibility for proper stewardship of their stockholders' interests lean heavily on long-range forecasts of economic activity. Staff economists prepare charts which project probabilities with respect to the world, the hemisphere, the countries and industries in which the company is represented, as well as the operating divisions or activities of the company. Similarly, in order to understand the effect of inflation and distinguish between productivity and price-level increases, various methods of analysis have come into use by financial management. These range from accounting for units as well as dollars to the use of price-level indexes.

In its own back yard, financial management has demonstrated that the tech-

nology of collecting and digesting routine financial information does not need to lag behind new industrial processes. There is a growing tendency for the larger companies to apply methods engineering to clerical procedures as well as to production or other operating functions. In fact, the analysis procedures described generally as clerical work measurement programs have revealed many instances of needless complexities or inefficiences in the processing of financial information, the corrections of which have provided large savings.

The Role of Accountants

Accountants and accounting executives (or management accountants, as they like to think of themselves) are an important part of management. Traditionally, it has been the accounting function to gather and report the results of business operations in financial terms which constitute the language of business. More and more the accountants are supplying much of the meat of planning and muscle of control in the corporate enterprise. The plant, group and divisional accounting executives are becoming, not merely vocal, but eloquent participants in management at the levels of their operating and marketing counterparts. The top financial officers are usually accountants and, not infrequently, some of the top general officers have accounting backgrounds. An accountant with management vision and business sense has a greater opportunity today than ever before. His knowledge of the details of budgets, costs and variances and general principles of accounting and internal control should make him the outstanding generalist in the councils of top management.

Of course, financial management is not the prerogative of the accountant alone, but it is almost impossible to conceive of a financial manager without a knowledge of accounting. Wilson T. Seney reported in February 1958 issue of *Dun's Review* ("Financial Management for an Electronic Age"), that the financial training, even of the non-financial executive, is assured in one company which requires all executive trainees to spend considerable time working in accounting functions. He also mentioned another firm with heavy engineering and production contracts for industry and government, which uses closely knit three-man project teams for planning and control. One of these three men is always a cost accountant.

But here is a word of warning to accountants. To share in management, recognize and capitalize on the abilities of individuals in financial management who are not accountants. Do not burrow into a rut of debits and credits. Financial management today needs broad-gauge leaders. The opportunity curve for accountants is rising more steeply than ever before.

Net Profit Allocation in a Retail Chain

by HOWARD W. ANDERSON

A FEW YEARS AGO, when our company was prompted to undertake a return-on-investment study which would provide an internal measurement of profitability, the individual units being each retail outlet in a 28-store chain, we found that research into other company practices is at first more confusing than helpful. Confusing because, reading published articles dealing with varying techniques in use from company to company, we find:

1. Rate of earnings on total capital employed.
2. Rate of earnings on proprietary equity.
3. Net profits on tangible net worth.
4. The accountant's method.
5. The engineer's approach.
6. The discount or investor's method.
7. The average investment method.
8. Rate of earnings on gross tangible assets.
9. Rate of earnings on gross assets.

Some of the above apply more to analysis of proposed capital expenditures than to the historical results of past operations. The interplay of methods, also, is considerable.

To read of another's viewpoint or his reasons for making a selection of method serves to underline how little uniformity has been reached and, further, to show that uniformity is probably not even desirable. Not desirable as related to *internal* measurement. For internal purposes, management can decide which one is most useful. If the report is a real help to management, it should not much matter whether it is a textbook basic ratio, a hybrid, or even unorthodox. In a sense, we are trying on pairs of shoes, until one is found that fits. It is evident that each company has a reason, or reasons, for its particular choice of method.

External measurement is quite another thing. Especially for credit purposes or for purposes of telling what values or ratios are behind the investor's share. Uniformity here would be most desirable. When we consider the different methods of valuing inventories, of depreciating classes of assets, of valuing receivables and the results of inflation as related to fixed assets that have been owned many years, it is no wonder that bankers and regulatory bodies cry for uniformity.

HOWARD W. ANDERSON, Des Moines Chapter, 1949, is a Partner and Chief Accountant of the United Food Markets and the Central Wholesale Grocery Company, Des Moines, Iowa.

Each Company Must Seek Its Particular Solution

While at first it is confusing to read of the multiplicity of methods of computation in current use, it becomes helpful because, sooner or later, we realize that there is no uniformity of situations from company to company. Each man is wrestling with his own problems.

It is plain that methods of computation, especially in the giant companies, are detailed, well thought out and quite exact, considering that accounting is, as yet, far from being an exact science. From some techniques described, it is apparent that the end report is the product of much staff work.

At some point in one's deliberation, the ratio most meaningful to the particular enterprise must be chosen. An alternative would be to compute any and *all* ratios. One which measures profits against investment, should suffice. It will furnish management with the needed guidance. An investor, a regulatory body or any other interested entity can make computations of *his* choosing, provided he has balance sheets, properly footnoted as to valuation methods, etc., and provided he can rely on their accuracy.

This article will speak from the view of management and its concern for guides for decision-making, and for spotting trends. It is at this point that we may dwell on just how inexact our vocation really is.

Many balance sheet items can be allocated to internal units on an actual basis. For this we can be thankful. Indeed, it is the fact that we have a preponderance of values that are known, that gives the end result its usefulness. The balance sheet items which must be spread, by one basis or another, are the ones which cause us to know that our answers are not exact; they contain a margin of error, the extent of which is not even known. When you pause to reflect that, if ten different men were given the task of computing net profits on tangible net worth for each unit of a twenty-eight store chain, each man working from the same historical records, ten different answers would probably result, then the problem has been stated.

It is very simple to compute this ratio for the organization as a whole. First, it is a matter of definition of a term and, then, the arithmetic, quickly done. Our choice was to use definitions as contained in published industry-wide comparisons by Dun & Bradstreet, Inc.

> *Net profits*—Profit after depreciation on fixed assets, reserve for Federal income and excess profit taxes, reduction in the value of inventory to lower cost or market, charge-offs for bad debts, and miscellaneous reserves and adjustments, but before dividends or withdrawals.
>
> *Tangible net worth*—The sum of all outstanding preferred or preference stocks (if any) and outstanding common stocks, surplus, and un-

divided profits, less any intangible items in the assets, such as goodwill, trademarks, patents, copyrights, leaseholds, mailing lists, treasury stock, organization expenses and underwriting discounts and expenses.

Stores — The Basic Allocation Units in Our Retail Chain

Our structure of accounts contains operating information for each store, for the main departments within a store, and for headquarters or the main office. In allocating balance sheet items to each store, we adopted the philosophy that all headquarters values would also be spread to the stores as the income producing units, for any headquarters income is received because of the store; that headquarters is a service organization for the stores; and that headquarters investment exists only because of the stores. As a result, working papers often require two lines to handle one specific item, one to spread values by stores and one to apportion headquarters value (if any) for the same item.

The following asset items can be distributed to stores on an exact basis, because each store's value is a known or determinable quantity as of the balance sheet date:

Change funds.	Prepaid insurance—fire.
Merchandise inventory.	Buildings—net of reserve.
Accounts receivable.	Land.
Prepaid rent.	Equipment—net of reserve.

The following liabilities can be distributed on an exact basis for each store:

Accrued salaries & bonuses.	Accrued F.I.C. taxes.
Accounts payable.	Accrued withholding taxes.
Accrued sales taxes.	Accrued use tax.
Accrued property taxes.	Accrued unemployment taxes.

Distribution Bases

Cash in bank (checking account) and a permanent bank balance maintained in an accounts payable special account pose the problem of finding a distribution basis. How much of the cash currently residing in the headquarters bank is there as a result of the operations of Store A? of Store B? etc.

We know that the current cash balance consists partly of amounts shortly to be paid, such as the accrued tax items and the accrued salaries and bonuses. Has Store A, because of being profitable, been responsible for the cash that will be needed to pay taxes due as a result of the operation of Store E, which is currently in a loss situation? Certainly. Would a pro-rate of store contribution to total profit be a fair basis to allocate cash? One could reach this conclusion. However, this could lead to a minus allocation for cash to Store E. Would this not result in understating tangible net worth for Store E?

It would be relatively easy to total the current accrued items payable, reduce this total by the amount of accounts receivable which will be currently converted to cash, and let this represent the bulk of cash in bank. Undistributed profits would still have a claim on our cash balance, however. Would we couple this factor with the above, to attempt an allocation? No.

If Store E is currently in a loss situation, does it not require more cash to be invested in the business? Cash is as necessary to operate a store as is equipment, whether operating at a profit or a loss. For this reason, we have settled on a prorate to sales in allocating cash to stores on the worksheet which is shown as Exhibit 1. It will be noted that the information given carries through to calculation of the return ratios on the bottom line. Of course, any margin of error here distorts the answer. A similar error of allocation would also affect return on investment figures of, say, a manufacturer of automobile batteries with a three-factory operation, if any one factory were currently unprofitable.

This leads back to our earlier statement that, because of the heavy preponderance of *known* allocable values, we will have reliable answers, with distortion held to a minimum because of the small weighting actually borne by the items that must be spread by an arbitrary basis.

At this point, a comparison of small business versus big business can be made. Accounting staffs are not large in the average small company. The personnel often serve double duty. However, small business often desires to avail itself

Allocation Worksheet *

Tangible Net Worth Items	Basis for Spread	Amount to Be Spread	Head-Quarters	Store A	Store B	Store C
Cash - Checking acct.	Sales prorate	183,092.17		6,315.64	4,851.56	9,530.88
Cash - Permanent bal.	Sales prorate	3,000.00		132.00	101.40	199.20
Change funds	Actual	19,900.00		500.00	550.00	800.00
Merchandise inventory	Actual					
Notes receivable	Actual					
Accounts receivable	Actual sales	39,335.03	4,460.13	580.59	398.05	1,487.94
Accounts receivable	Prorate		-4,460.13	201.75	154.98	304.45
Accounts receivable (total)		39,335.03		782.34	553.03	1,792.39
Prepaid rent	Actual					
Prepaid ins-fire	Actual					
Balance of assets	Ditto					
Accounts payable	Actual	14,028.19	1,803.33	874.87	385.29	931.25
Accounts payable	Sales prorate		- 1,803.33	79.33	60.94	119.72
Accounts payable (total)		14,028.19		954.20	446.23	1,050.97
Balance of liabilities	Actual					
Net tangible worth						
Annual net profit	Actual					
Profit distributed to stores						
Percentage profit on tangible net worth		%		%	%	%

* All figures hypothetical

EXHIBIT 1

of large-company techniques and practices in its efforts to achieve control, in the interests of adequate reporting and in a desire to aid management effectively. Measuring profitability of each store in relationship to the investment results in a report we need and use. Since our staff is small, we prefer not to have multi-factor bases for spreading allocable values. This, in all probability, represents a compromise with exactness. We feel, however, that, if distortion is small and methods are applied consistently, we have a useful tool.

In assigning headquarters values back to the income-producing stores, we have settled on similar short-cut methods. We do not have the man-hours to spend to choose the lengthy route. For example, any accounts receivable due headquarters is also spread to the stores on a sales pro-rate, because the receivables consist of coupon billings back to manufacturers, advertising contract billings and other items that have a direct or indirect relationship to store sales volume. By expending much more time, we could determine exactly each stores portion of accounts receivables as of a balance sheet date.

Tangible Net Worth Earnings Ratios

While we have full closing of the books on a quarterly basis, we calculate tangible net worth earning ratios on the basis of the year-end balance sheet. Averaging of five inventories, five fixed asset sums, etc., would, of course, furnish a better answer. The advantage of small business over large business is in the fact that, generally, ownership is represented by the active management team and intimate knowledge of the items normally footnoted in reports is shared by all members of the team. In our company, if the investment of Store C is doubled during the month of August, we are all aware of that fact. We can make our own mental footnotes as we read the prepared report. (In the interest of good reporting, the footnote will be there, however.)

I. Wayne Keller points up the divergence of practice as employed by companies in trade and industry in his article, "The Return on Capital Concept", published in the March 1958 issue of the *N.A.A. Bulletin*. Why did my company choose the Dun & Bradstreet definitions and a report, "net profits on tangible net worth", rather than a report, "return on capital employed"? We are at a greater disadvantage than most in comparing our results with others in our trade, because of operating with a partnership form of organization. The partnership form has served us well but we know that reporting companies are corporate in almost every tabulation published. This forces us to adjust, before comparing, for such inherent differences as income tax treatment and possible salary differences, but our report does allow us to compare results with upper

quartile, median and lower quartile with 50 to 100 retail organizations similar to ours.

Store Profit Evaluation

The internal results (28 stores) certainly serve as a trend-spotter. It helps management to know what limits to stay within as to the dollar total of an investment for a given sales potential.

Since we operate in company-owned buildings in some towns and in leased buildings in other towns, we feel it necessary to publish the report in two sections, one for operations in our own buildings and one for stores operating in rented rooms. (The investment dollars, of course, differ greatly). An average is shown for each of the two groups of stores. It points up unsatisfactory or very satisfactory profit results that could be overlooked in a report showing only dollar profit.

In evaluating answers, factors peculiar to only one store or to a few stores must be kept in mind. Investment totals can be heavily weighted by just one asset. For example, Store F has a surfaced parking lot, this improvement costing $10,000. Store L, while similar in size and similarly equipped, has only on-street parking. Assuming profitability to be the same, Store L will, of course, have a better ratio of net profits on tangible net worth. Store O has two eight-ton air conditioners. Store D is not air conditioned. Store R is the only store of 28, equipped with a large walk-in storage freezer. Ratios in these instances will, of course, vary.

Management must decide if profits are poor because of lack of investment facilities. Will the capital expenditure for a surfaced parking lot provide the stimulus needed for better volume and profitability at Store G? Should existing facilities in Town X be closed down in favor of all new plant?

Inexact, Perhaps, but Efficient

Under our country's economic scheme of things, efficiency is measured by the rate of return on the dollar invested. Management causes earnings or the lack of earnings. Accountants provide management with the aids needed by ownership. Reports consistently applied, according to the formula of your choosing, are of course the greatest help in decision making.

While admittedly inexact, but probably only nominally more inexact than a much more detailed report, we feel that we have a tool, at the expenditure of relatively few man-hours, which is of great value in our forward planning and in our management control efforts.

Advertising Efficacy — An Analytical Study

by HAROLD W. FOX

AN ANTICIPATION of adventure accompanies almost all analytical assignments. The interplay of operating executives and staff men, the probing into the unknown, the thrill of discovery, and the climax of imparting the findings are among the prospective rewards. The subject of the study to be described is advertising effectiveness. However, this article does not teach how to evaluate media expenditures or how to conduct an investigation. Rather, it may serve to illustrate the type of work in which financial analysts engage.

The Product and the Problem

Visualize an operating statement showing a high rate of gross profit and a low net. The analyst may be expected to focus his attention on the various period expenses such as administrative and selling. In the case at hand, advertising expenditures accounted for the major portion — a common occurrence among manufacturers of consumer goods with a high elasticity of demand with respect to advertising. Examples are tooth paste, hair tonic, beer, cigarettes. It is important that the reader fix the type of product firmly in mind. The procedures to be described would certainly not have been used with consumer goods suitable for marketing through substitute or complementary efforts but, in our case, product differentiation, aggressive pricing or personalized selling did not seem a practical alternative to heavy advertising. The class of merchandise discussed here is typically pre-sold to the consumer through a barrage of propaganda with almost fleeting impact — some of it penetrating sufficiently to influence the consumer on her next purchase. Many millions of dollars are invested every year to keep the brand names before the public.

What is an answer to responsible businessmen who are asking for an evaluation of the return on the speculative expenditure? It devolved upon the analyst to compute this information.

HAROLD W. FOX, Paterson Chapter (Cincinnati, 1954), is Head of Management Services at Rowe Manufacturing Company, Inc., Whippany, New Jersey, a subsidiary of Automatic Canteen Co. of America. He is a sometime instructor of the Graduate School, Fairleigh Dickinson University. Mr. Fox is a graduate of the College of the City of New York, and received his M.B.A. degree from Xavier University, Cincinnati. A previous contributor to the *Bulletin*, the author has also written articles which have appeared in other publications.

Prior Investigations

Can an analyst draw upon marketing facts at the start of his project? While the general question of advertising effectiveness has not been resolved thus far, researchers have amassed considerable knowledge about many phases. Independent agencies publish audited circulation figures of magazines and newspapers. Readership studies show the composition of the audience. Similarly, research companies rate the popularity of radio and television programs.

Frequently, special research precedes large campaigns. Motivation research explores why consumers buy a particular product. Then, advertisers can emphasize those selling points which apparently stimulate consumers to make the purchase. There are many forms of market tests on the principle of controlled experiments. For example, coupons or addresses are keyed to variations in copy, placement, format, medium, etc. and the tabulated returns are analyzed. A more elaborate method involves the setting up of comparable trading areas and relating changes in retail sales to the variations in pressure. Continued throughout a campaign, these measures can highlight cumulative impact. Meantime, recognition, association, and recall tests indicate the penetration of advertisements, while scaling tests show the public's attitude toward the messages. Sales results over a period of time secured from audits of retail stores, administration of consumer panels, household surveys, etc., can show whether extra volume occurring at the time of the special effort was followed by continuing higher rates or was offset by a lag in re-orders.

There is much more to this, of course, but perhaps the scope of background information relevant to the analytical problem has been indicated. In our case, a few giant companies dominate the industry. Research on the quality of advertising indicated that three companies seemed to be on a par, while a fourth company seemed inferior. The marketing research department has contracts with statistical researchers for data on sales, at retail, of competitive and company products and on measured advertising expenditures. The analysis group maintains a file of these reports and uses them on numerous projects. On some occasions, cooperation between the departments results in joint contributions.

The Procedures of Advertising Appraisal

The analyst marshals the available information and considers different approaches to the problem of quantifying advertising leverage of highly responsive brands. For example, the effects of promotions, price changes, package improvements, and other maneuvers are examined both on a national and a trading area basis. Even after considerable evidence points to advertising pressure

as the main generator of sales volume, the analyst continues the search for other determinants.

Perhaps the most obvious manner of appraising the effectiveness of advertising is to check the sales curve following a particular campaign. This line of inquiry seems to persist, probably because of its pragmatic and intuitive appeal. But there is the danger that the real impact of advertising might be submerged under a forceful trend in economic activity or in population growth or in the per capita consumption of the product class. Trends such as these or a sudden seasonal shift might affect all brands of a class in proportion to their entrenchment. An analogous pitfall would be to view only the absolute magnitude of expenditures. A retrenchment in spending may still leave a company more exposures than those competitors which cut advertising efforts more deeply, and vice versa.

The desire to avoid such traps yet to experiment with a direct evaluation of advertising effectiveness led the analyst to formulate the hypothesis which follows. A measure of advertising efficacy applicable to highly responsive brands is the ratio of

$$\frac{\text{Product line brands' sales share of the market}}{\text{Product line brands' advertising expenditures share of the market.}}$$

Share of the market is the product figure divided by the total market figure for a simultaneous period. For example, if a manufacturer sells 20,000 units and all manufacturers in this line sell 100,000, his share of the market is $20{,}000/100{,}000 = .20$. It is usually stated as a percentage. In the example, it is 20 per cent. But what is the market? Does a particular tooth paste compete with other brands of tooth paste or also with tooth powders? It is apparent that a market must be delineated according to the purpose of the investigation. (This is like "different costs for different purposes" in accounting.) For the manufacturer of containers, all users of collapsible tubes constitute a market, regardless of whether they manufacture tooth paste or shaving cream. In the present case, the market comprised the sales of those specific products which the public uses interchangeably. Consumers' views defined the breadth of the market; their purchases, the size. The analyst must exercise similar care in calculating the share of advertising.

Testing the Degree of Interrelationship

In testing the degree of association between two sets of data, the first step is to graph them. The independent variable (cause) is plotted along the hori-

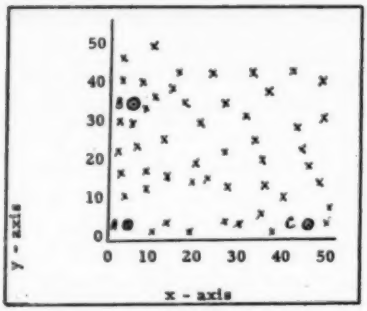

EXHIBIT 1

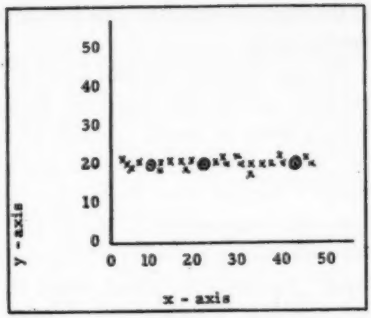

EXHIBIT 2

zontal axis (x) and the dependent variable (effect) along the vertical axis (y). Exhibits 1 to 3 depict some basic patterns. Exhibit 1 shows a random relationship. There is no evidence of a predictable effect; many possible values of y might correspond to a given value of x. Three points to illustrate this conclusion: (A) x has a value of 6, y is 4; (B) x is 6, y is 34; (C) x is 46, y is 4. Again, Exhibit 2 shows that there is no dependence of y on x. The value of y remains approximately the same, no matter what the value of x is. X may be 12 or 22 or 43; y is usually about 18. In the case history recited here, share of advertising expenditures was plotted along the x axis, share of sales along y. Exhibit 3 shows the scatter of the completed chart (scales omitted). In this graph, the changes in share of advertising and in share of sales move consistently in the same direction. The less deviation there is from a line (curve) drawn amid the readings, the closer the numerical association of the data. Thus, if all the observations were right on the line, the two sets of data would appear to be 100 per cent related.

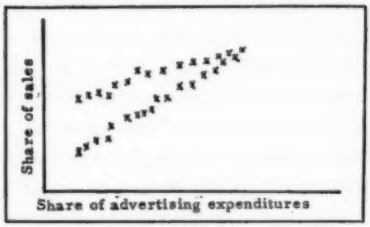

EXHIBIT 3

This visual appraisal of relative closeness can be specified by a statistical measure called coefficient of determination. The more the variation in the dependent set of data follows the variation in the independent set, the nearer to unity is the coefficient. However, a high coefficient of determination is not evidence, *per se,* of a cause-and-effect relationship. Here is an example of spurious results. In many firms, successive trial balances will show that overhead and profit either both expand or both contract. But this concurrence does not

prove that high overhead is causing a high profit. Rather, the high degree of numerical association arises because levels of activity and efficiency cause both amounts. Thus, two sets of data with common determinants will yield a high coefficient — which is irrelevant. Logic is always the first test in a regression analysis.

The purpose of regression analysis is to determine the association of data which are inherently or structurally related. Common accounting examples are: sales and accounts receivable, production and direct labor, wages and fringe benefits. In each pair mentioned, the first-named activity or expense is a numerical cause of the second. Another prerequisite to sound regression analysis is that in any given set of data each reading must be independent of the others. Since these market measures do not meet this requirement, they must pass additional statistical tests before the coefficient of determination may be considered significant. Applicable regression formulas and tests of significance are described in elementary statistics books and will not be detailed in this article.

Preliminary Findings

Historic data disclosed that over a period of sixty months of fluctuating volumes each of the three large directly competing companies, using advertising pressure consistently but in varying amounts, had a coefficient of determination about .90 in the association of their share of sales to their share of expenditures. (No lead time for advertising). These high coefficients emerged only after the brands' histories were split into (a) increased share of expenditures since the previous reading (Exhibit 4) and (b) decreased share (Exhibit 5).

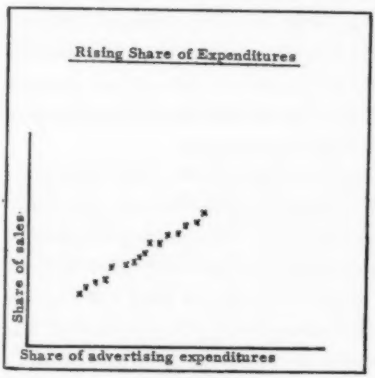

EXHIBIT 4

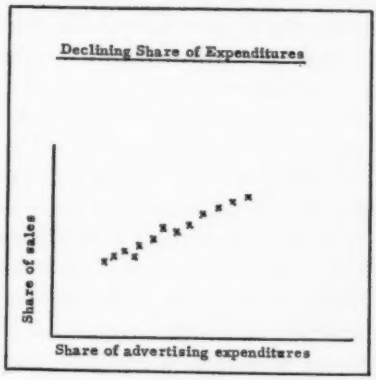

EXHIBIT 5

In one test, the slope of increase was steeper than the slope of decrease, suggesting (1) that possibly the goods were highly elastic with respect to incremental advertising and (2) the presence of a lag effect. Another interpretation of the data was that the consumer population consisted of a large volatile segment, superimposed on a smaller hard core. Marketing research supplied more specific answers about the composition of the market and pointed the way to tailoring the appeal. Thus the simple technique here provided an exploitable clue and set informational objectives.

Near the end of the experiment the strongest company spent in two months more than twice its previous annual rate. While its share of sales moved up, too, the latter did not keep pace with its skyrocketing share of expenditures. Presumably, the relationship was valid only within certain limits or only for smaller increments.

A fourth company of similar strength had a low degree of association between advertising and sales shares. That company lacked a balanced product line. Hence, it was not strictly comparable to the other three. Also, this fourth company had a record of spending more than twice the rate of support per unit sold than the industry average and of changing product image and media frequently. Under the circumstances, the behavior of the statistical indicator did not seem inconsistent with the hypothesis.

Predictive Applications

An indirect prediction for a company is at times more accurate than a direct prediction based on past company data or individual salesmen's estimates. For some product categories, short-range forecasts of the total market volume command a high degree of confidence. In the case of tooth paste, for instance, per capita usage is quite stable in the short run. Current birth and mortality rates establish the expected change in population over the coming year. If a product is elastic with respect to consumers' disposable income or gross national product, the basis for predicting the size of the market is available from forecasts published by the U. S. Government and by private organizations.

However, an unprecedented abrupt change in usage patterns, such as occurred when an alleged association of cancer with cigarette smoking was first publicized, cannot be predicted from historic relationships. It is a necessary precaution to check indirectly derived predictions with estimates secured independently from intimate knowledge of trade. Not only medical research as cited but also the vicissitudes of consumer preferences, product innovations, pricing practices, and changes in channels of distribution are among the numerous trade factors which produce changes in volume.

Since the correlation computed in the study seemed to hold for shares ranging from 10 per cent to 50 per cent, the technique was used for estimating the sales attainable with given amounts of support. This application entailed predicting the amounts to be spent by the competitors (in order to compute what the company's share of the total would be). A graph of accumulated experience enabled quick translation of an expenditures share into a sales share. Multiplication of the derived share of sales by the forecast of total industry volume resulted in a prediction of company product sales to ultimate consumers. Finally, this retail sales estimate was adjusted for inventory changes in the channels of distribution.

Suppose the forecasts of total industry advertising and sales were 10 million dollars and 100 million units, respectively. What, according to recent history, should be the expected result of an effective deployment of 1.8 million dollars for advertising? Say that 18 per cent share of advertising corresponded to 14 per cent share of sales. (For several reasons, the two percentages were not equal). One, as mentioned previously, declining advertising shares retained on excess share in sales, at least temporarily). Hence, 14 million sales units served as basis for estimated retail volume. Once the attainable sales were derived, the appropriate amounts for cost of sales and period expenses could be computed by conventional methods. Before the statements were adopted and the advertising appropriation was made, the corresponding volume prediction was checked by other methods.

The project's requirement to develop comprehensive data on competitors' future advertising enabled a contribution in marketing intelligence. Reported measured advertising was inadequate for predictive purposes. It became necessary to compile as complete a record of advertising plans as possible. Predictions of competitive campaigns were supported by a file of reported commitments, trade paper items, published financial statements, etc. This information alerted the marketing department about impending competitive tactics.

Continuous Research Necessary

The execution of this analytical assignment led to the discovery of a formula which was of immediate use to budgeting, production planning and marketing management. In our dynamic economy, it cannot be expected that a particular technique will always be applicable. Continuous research is necessary to obtain for a company greater participation in the new opportunities. It is the analyst's privilege to provide operating management with the informational means for steering a company successfully.

Cost Reduction in The Accounting Office

by CHARLES E. KLINCK*

AS HAS BEEN SAID many times before, one ofttimes overlooks the opportunities in his own backyard by looking over every other department and its operation. Further, many small procedures may, in like manner, be overlooked in the search for the bigger area for cost reduction. Therefore, the following example is presented for the purpose of emphasizing the need to take a closer look, especially at the accounting office, as well as the minor operations within a company for additional areas for cost reduction.

Some time ago, in an analysis of a posting machine operation in our company, it was noted that the operator in posting charges to our customers' accounts used the symbol 30 NT, except in a few instances where special terms were indicated. The necessary operations were:

1. Enter the date and reference, machine automatically moves to debit column.
2. Tabulate to typing space.
3. Type the symbol 30 NT.
4. Return the carriage to debit column.
5. When amount of charge is entered, machine automatically completes the transaction and opens carriage for the next account.

The entry of this symbol, 30 NT, had originated three (2., 3. & 4.) of the five operations. By eliminating the 30 NT entry we eliminate three-fifths of the posting operations on these particular charges. Also, it was reasoned that, besides the time saved and the wear and tear on the machine, the customers do not need this entry on their statements, because most accounts are paid by invoice and the terms are on all the invoices. The special terms items will still be shown and, by deduction, the remaining ones will be 30 NT, which information is used from the ledger card when aging accounts.

It is readily seen that by eliminating three-fifths of the operations in posting the customers' accounts, we were already saving considerably in this area. However, to further the analysis, we took a typical month for special charges and found that 73 percent of the invoices were 30 NT. Carrying it one step further, we found in a six months' period that 14,911 invoices were posted; 73 percent of this figure, 10,885, were 30 NT charges. Therefore, by eliminating the symbol of 30 NT we saved 32,655 posting machine operations during the period.

In brief, you will find, as we did, it is the little things that count, so look around and, we think, you will see ways to make the look around pay off.

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*Assistant Secretary, Mississippi School Supply Company.

Cost Control in a Large Feed Company

by JOHN W. GERBER

THE RALSTON PURINA COMPANY consists of a large number of relatively small operating units. Another characteristic of the company is the large degree of freedom of action given to local management in implementing general company policy. However, this autonomy carries with it responsibility since local management must answer to top management for results. Finally, it should be kept in mind that the company operates in a high volume-low margin industry. This, of necessity, places a premium on cost control, not only in order to gain a competitive advantage but also to maximize profits. What could be considered an insignificant cost reduction in many industries takes on special importance because of the large dollar savings that can be achieved by multiplying small unit savings by large volume.

The most important trend in the development of cost control in our company has been the placing of cost responsibility on those with direct authority to control expenditures. Under this basic policy the foreman assumes special significance.

Development of Cost Control

During the early years of the company's existence, cost information was largely restricted to basic accounting records. It was available to top management but not distributed to lower management. There was no organized reporting system and any information from the field came in on a "hit or miss" basis. In addition, the accuracy of such information was questionable. Management recognized the weaknesses in this system and the need for more and better information. It was felt that a well-organized reporting system originating from branch management would eliminate these weaknesses and furnish better information. The following comprises the major steps taken in developing an organized system of reports:

Account Details. Cost sheets were established for major accounts to furnish a breakdown of the larger items of expense included in each and to permit the pinpointing of fluctuations in expenses.

Budgets. Budgets served the purpose of forcing branch management to think

JOHN W. GERBER, St. Louis Chapter, 1959, is Cost Accountant for Ralston Purina Company, St. Louis, Missouri. Mr. Gerber holds a B.S.B.A. degree from Washington University in St. Louis.

about future costs. However, because the initial budgets were made in the general office and their value was restricted to a forecast of expenses, they failed to serve as a cost control tool. Since major changes in the figures had to be made in the home office, plant personnel lost some feeling of responsibility. Consequently, the next step was to place budget responsibility in the hands of the branch plants. This led to a long period of education in budget fundamentals because branch plant personnel lacked budgeting experience. Branch personnel have now become so proficient that it is seldom necessary for the home office to recommend changes or adjustments in the estimates submitted by the branches. It should be mentioned that no separate cost and budget departments exist at the branch level; the overall responsibility for review and consolidation remains in the home office.

Operating Expense Report. During the time budgets were being developed, a standard expense report was adopted which listed expenses incurred at the branch level. They were divided into two categories—manufacturing expense and local office expense. These major categories, in turn, were divided into controllable and fixed elements. The standard expense report was related to units of production and a unit cost was calculated for each item of expense. This permitted an accumulation of historical cost information and cost trends and, also, the comparison of costs between the various operating units.

Other Cost Reports. As the need for specialized control in certain cost areas became evident, additional reports were adopted. Reports on labor, repairs, power, etc., were initiated and subsequently have proved very successful in furnishing information for controlling individual costs that comprise the major portion of the company's manufacturing expense.

It should not be assumed from this discussion that reports are made only for top management in the home office. The fact that cost information does become available to top management is certainly one of the benefits of the reporting system but it is not the primary purpose; the reports are made for local management, not for the home office. Local management is responsible for production costs and reports are designed to aid them in that task. In fact, each branch now has a large rubber stamp stating "We Do Not Need This Report" and can use it whenever it is felt that a report has no value at the branch level. This prevents reports from becoming stale and outliving their usefulness.

Development of Other Cost Control Tools

Goals are theoretical levels of achievement which the branch divisions would

like to attain. These are set both by the branch plants for their own operations and by the home office for company-wide operations. Goals have played an extremely important part in the company's cost program. They differ from budgets in that they represent a performance that can be achieved only by an unusual effort, rather than by what might realistically be expected during a budget period. Yet experience has shown that the goals are not unattainable, even though they may appear so at the time they are established. Time after time, through teamwork and the ability of people to rise to a challenge, these goals have been attained. It is doubtful that any other device has been as successful in reducing costs as the response of the company's personnel to the goal program. Furthermore, our experience has been that, once the goal has been attained, it becomes the standard of performance rather than something "hoped for." It has not been a case of making a goal one month and then backsliding the next.

Comparisons, Summaries & Analyses. One of the main advantages of receiving cost reports from branches is that they permit a flow of information back to the branches in the form of comparisons, summaries and analyses. This permits local management to evaluate its position, to determine where costs are out-of-line and to take corrective action. It also encourages the exchange of information between branches. Thus, one branch with a high cost in some phase of operation can contact a branch which shows a low cost in this phase and compare notes on methods, procedures, etc.

General Principles of Cost Control

There are certain general principles which are necessary in order to achieve good cost control. These may be listed as follows:

1. Clearly define the unit to be controlled. Ambiguity will cause trouble in any cost program.
2. Set up units of control that will give as much comparability between branch plants as possible. In order to get cooperation, it is necessary to eliminate, to as great an extent as possible, the feeling that some plants are treated unfairly. This can never be done to the satisfaction of everyone, but it must be made clear that bickering over small dissimilarities in operation prevents or delays positive action. Experience has proved that initial complaints tend to disappear after a program has been in effect for a period of time.
3. Make the accounting system adequate to provide for a logical breakdown of expenses; ensure that expenses are charged to the proper accounts.

4. Establish reporting systems that are practical, simple and straightforward enough so that an accounting background is not needed to interpret them. See to it that the reports are informative and, most important, that they spur interest. Also, have a periodic program of reviewing reports in order to weed out those that have outlived their usefulness.
5. Make maximum use of goals and budgets as control tools. Work with those responsible for meeting objectives when the goals and budgets are established.
6. Take advantage of the multiplicity of plants by publishing comparisons which make an appeal to the competitive nature of people and which also allow management to pinpoint areas needing attention.
7. Conduct a never-ending educational campaign to make personnel cost conscious. This is especially important at the foreman level:
   a. Stress the fact that cost control has to stem from the person spending the money as the money is spent.
   b. Use the concept of "balanced management" in putting cost control in proper perspective. Cost control is one of the important responsibilities of every supervisor and should be considered as important as quality, production, scheduling, etc.
   c. Show that every decision or action eventually will be reflected on the operating statement either as addition to or deduction from profit.
   d. Work with individuals by showing them how to use and interpret existing records. Point out sources of information that can be helpful and show how any supervisor can keep his own records as an aid in controlling specific operations.
   e. Stress the point that, in order to know how well you are doing, you have to know what you should be doing. This is simply applying the principle of standards: determine what the cost should be, get actual in line with standard and then search for new methods or improvements to reduce the standard.
8. Get strong backing from line management. A truism of cost control is that, "if the boss wants it bad enough, he'll get it." All of the preceding principles will be of little value unless line management is enthusiastic about the cost programs and can communicate this enthusiasm down the line.

. . . *Applied to Specific Cost Areas: Labor*

Of all the expenses incurred in manufacture of poultry and livestock feeds, labor is by far the largest, accounting for approximately one-half of the total costs, and, also, appeared likely to increase at a more rapid rate than other

costs in future years. Thus, the first major campaign was directed at labor costs.

The first step was to establish a breakdown of costs that would provide for the accumulation of labor by function and by responsibility. For this purpose, a special series of accounts for manufacturing labor was set up. At the same time, a report, called labor detail, was established to give management a picture of labor costs on both a month and year-to-date basis. The report was designed to tie to the total manufacturing payroll in order to ensure that all labor dollars paid were accounted for on the report. The first labor reports consisted of dollar breakdowns of the labor functions prepared from the time cards by the branch plant accounting departments.

As soon as the reports became operative, the next step was the publishing of comparisons among plants. This immediately spotlighted areas of control that were out of line; the first beneficial effects of cost control were realized —the cost department had given management an operating tool that the latter could use in directing efforts to cut costs. The company's cost control program has never been directed at getting an excessive amount of physical effort from labor. Conversely, it has been found that the key to lower costs had been good planning in all phases of plant operations and that, once achieved, it has often been accompanied by a decline in physical effort. The "hurry-up" approach usually results in "hurry-up and wait," while the efficient operation is achieved by a steady application of effort, accomplished through good planning and scheduling.

The first problem that developed concerned the matter of comparability due to the wide divergence of wage rates in different sections of the country. This was solved by supplementing the original dollar breakdown of labor with a similar breakdown by man-hours. This furnished a unit that was entirely comparable and, also, historically accurate. Another problem of comparability that has been encountered in all phases of cost control is the matter of physical facilities. Older plants naturally have some built-in inefficiencies while newer plants have benefited from the availability of better equipment and the benefits of experience. This is a real problem that can never be completely overcome; however, it was greatly alleviated in this company by the establishment of a standard department.

Labor Standards; Other Manufacturing Functions

The standard department was formed in the late 1940's and its first tasks consisted of establishing paid incentives in several plants. Later, from the

knowledge gained at these plants, standards for labor functions were established in all plants, without the monetary incentive. Now, so much historical data has been built-up from labor operations that a set of standards for management control can be established at a plant in less than two weeks. This program has accomplished the following:

1. Management gets a daily picture of labor performance which permits almost immediate action.
2. Standards permit an analysis of plant operations on the basis of "what they should do," which makes comparisons more valid.
3. A high standard, in terms of man-hours to perform a specific function, helps direct the flow of capital funds because it can indicate where savings might be made by the replacement of facilities.
4. A comparison of the standards, themselves, indicates where the best methods are being employed.
5. Since the standards department is accumulating hours in its work, the accounting department is relieved of the same task, with the provision that the accounting department is responsible for ensuring that all hours paid are accounted for by the standards department. At the same time, the dollar breakdown within the major labor category is eliminated, since operation control is achieved through the control of man-hours.
6. Standards as a management tool have proved as successful in increasing efficiency as the monetary incentives had been.

From time to time, to increase the area of control, other manufacturing functions were included in the standards unit. In every case, savings resulted from including the costs in the controlled unit. This is not meant to infer that other labor costs have been neglected. Comparative figures have been developed for all labor in the operating accounts, i.e., manufacturing labor, repair labor, power labor, etc., and these figures are used by management at both the branch and home level. Then, too, labor control is achieved in these areas through the control of the over-all cost itself.

Along with the accounting techniques described, many promotional "gimmicks" were employed—slogans, contests, prizes for meeting goals, etc.

Repairs

The need for control of repairs was seen when repair cost kept climbing while labor costs were being reduced. It began to appear that, if steps were not taken, repairs might become a larger expense than labor. As in labor con-

trol, breakdowns were established, reports were initiated and comparative data was published.

The comparability problem was again present because certain large repair expenses were incurred from time to time, that were not directly related to maintaining present production. To overcome the feeling that some plants were being treated unfairly, a reporting system was adopted which broke repairs down into three classifications, thus separating day-by-day repairs from repairs which occurred only occasionally. This eliminated many of the previous complaints and made the plants agreeable to what was trying to be accomplished. With the repair classifications properly defined, management established goals for branch plants to work toward.

To supplement the control achieved by cost accounting techniques, maintenance conferences are held to permit the free flow of information and ideas among operating people. Also, a maintenance coordinator has been established in the engineering department to work on preventive maintenance programs.

Total Cost Control

With the principles of cost control applied to labor and repairs, the two major operating costs were covered. More important, our operating people became well schooled in cost control techniques. Cost control tools have been provided for all other expenses but, because of the nature of the expense, these are not as elaborate as the controls over labor and repairs. Also, there have been many refinements made in the various programs, as our experience dictated. Flexibility to meeting changes in conditions have been maintained at all times.

Top management now emphasizes total cost control. The tools have been provided; the educational phase, though never over, has been well developed. Now, more than ever, the responsibility for total cost control lies with the plant managers.

Results of Production Cost Control

Some of the more outstanding results achieved by our program of cost control may be pointed out:

1. Total operating costs per ton of feed manufactured have been reduced considerably. In the past two years alone they have been reduced 11.6 per cent.
2. Labor control has probably been the most successful example of

what good cost control can accomplish. The company has been able to increase wages considerably since this program started, while it has been continually reducing total cost.

3. Although a formalized system of cost control for repairs has been in operation for only approximately two years, the upward trend of repair costs has been reversed, costs have been considerably reduced, and the trend is now downward.

It has been said "a company pays for cost control whether it has it or not." In other words a company must invest in a formal cost control program or suffer higher costs because of lack of such a program. Our company feels it pays less by having a formal cost control program.

Simplifying Accounting Work in Smaller Companies

by MARION H. SIMPSEN

SIMPLIFICATION OF PAPER WORK in accounting is a much discussed subject and many articles describing various approaches have been written. From this we might assume that accounting systems are unnecessarily complex and could be made very simple. However, this would be a false assumption. The business world today is full of complications and accounting is, therefore, necessarily somewhat complex. So how can a complex matter be simplified? It cannot be simplified completely. The premise that simplification is a matter of relativity must be accepted.

Why simplify at all? Because it improves profits! Accounting, following modern society, tends to become more and more complex. Some of the complexities are necessary, some are not. All are costly. Simplification must concern itself only with the unnecessary complexities that are costing profits. Unfortunately, the systems engineer, the procedure man, and the accounting manager are often accused of bringing on more complexities instead of eliminating them. This usually results from misunderstanding or because everyone, more or less, finds it hard to understand and accept the why and how of a new system or process. Proper planning is essential to successful simplification.

The complete field of simplification naturally cannot be covered in an article of this length. Neither will an attempt be made to approach simplification of accounting as applying to the larger companies with more or less complete systems departments or staffs. Rather, this paper will be an effort to describe simplification in the smaller companies where, usually, no systems department or staff is available. Whether or not any company can afford to be without some systems men will not be debated here. However, it can be accepted, perhaps, that no company, large or small, can do without some systems program. Many systems specialists maintain that piece-meal simplification cannot be of lasting benefit. However, properly planned, simplification of this type can increase efficiency and bring cost savings in many instances. Proper planning is the prime requisite and will ensure that each simplification project is sufficiently large in scope to accomplish the desired result. As a guide to complete plan-

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MARION H. SIMPSEN, Cincinnati Chapter (Peoria, 1943), is Controller of Fox Paper Company, Cincinnati, Ohio. For a number of years he was associated with R. G. LeTourneau, Inc., Longview, Texas, and, prior to this, he was with Bylerly Brothers Music Co., Peoria, Illinois. Mr. Simpsen, a previous contributor to the *Bulletin* and holder of a Certificate of Merit, is Past President of Shreveport Chapter.

ning, the fundamental principles of simplification are presented in the following list:

THE SIMPLIFICATION PLAN

1. Why simplify?
   a Cost savings, clerical.
   b Time savings, executive.
   c Improved reporting to management.
   d Other benefits.
2. Who simplifies?
   a Overall direction by management.
   b Staff men.
   c Participation by others.
3. Scope.
   a Select area.
   b Effect on other departments.
   c Effect on other sections of accounting.
4. Planning project.
   a Select method.
   b Study process.
   c Schedule completion.
5. Installation.
   a Prepare written procedure.
   b Communicate.
   c Instruct.
   d Supervise.
6. Follow up.
   a Compare result with aim.
   b Review compliance with procedure.
   c Correct procedure as necessary.

Why Simplify — and Who Is to Do It?

The goal or goals of simplification must be defined. The first objective is usually some type of cost savings. Clerical cost savings is listed as one of these. Next, but perhaps first in importance, is saving time for executives. This can be accomplished by the simplification of excess paper work which is crossing their desks. Improved reporting to management is another of the common aims of simplification. This can include not only the improvement of reports to make them more readily digestible but also the elimination of some reports and the elimination of useless information from reports otherwise essential. Last but not least is the item of better service to customers. This is often overlooked, as usually order procedures, shipping procedures, and billing procedures are so well-established that changes are made reluctantly. However, in today's competitive business world, faster order filling, faster shipping, and more prompt billing can often make the difference between you and your competitor in the struggle for a customer's business. There are also other aims and benefits related to simplification, depending on individual situations, but those cited above are probably the most common.

Who Simplifies?

The "who" of simplification means who does the work. The first essential is that the simplification program have active participation by management.

This can perhaps be furnished by the controller or some other executive of the company who is in a position to define the *essential* paper work. The individual selected to head the simplification program must question the need for reports, procedures, and the various carbon copies of documents which deluge the officers of the company. Often those farther down in the echelon of the business office defend the paper work by saying, "they want it." (The mysterious "they" usually can be interpreted as the group of top management personnel which staff men are reluctant to approach with a request for dropping some report or eliminating routing of documents.)

As it cannot be expected that a member of top management devote all of his time to the simplification program, staff men must be assigned to the various projects. This does not necessarily mean that a full time systems man is necessary, as many executives of smaller companies feel their operations do not warrant such a man. Therefore, individuals already serving in the accounting department as supervisors or staff accountants must devote some of their time to systems work. In such a position, of course, they must be well directed and, if possible, assigned to projects in the areas with which they are already familiar. The third source of manpower for systematizing is participation by the personnel involved in the procedure under study. While some individuals involved cannot be expected to contribute much, others can be very helpful in furnishing detailed information and offering suggestions as to improvement of the system. It is important that reliance be not placed entirely on supervision as, often, supervisors are not completely aware of the detail of procedures. Many times procedures are changed by the operating personnel without bringing the problem to the attention of the supervisor. Extra copies are added to sets of documents upon the request of some individual who feels he needs it. Many other extra steps are frequently taken to solve particular problems.

Scope of Program and Planning of Projects

The scope of the simplification project must be decided. In simplification in the smaller company, an overall complete study of the entire paper work system, or even in one department, usually cannot be attempted. Therefore, the areas to be investigated must be selected on the basis of the expected results. Usually there is no need to look long for areas which need study, as they are often brought to the attention of the controller or accounting manager in discussions with other staff members in accounting or with supervisors in other departments who have a problem in paper work. However, the scope of the project must be carefully planned after the particular function or process is selected. The effect on

other departments or on other sections of the accounting department must be studied carefully, as simplification in accounting cannot stop at the door of the accounting department. For instance, a study of customer billing procedures will invariably lead through the shipping department, the production department, and the order and sales departments. A study of payroll procedures will usually involve time cards and job or order reporting.

The points already covered are part of planning but not the detailed planning. The first step in such planning is to select the method of approach. The same method cannot necessarily be set up for all studies. In a complex system, a flow chart may be necessary, while in a less complex undertaking only a few brief notes may serve the same purpose. One of the points to be considered is whether or not outside help will be needed. Perhaps a firm of systems engineers will be required or perhaps a study by representatives of various makes of office equipment and forms can be put to good use.

The next and all-important step in planning is to set up the method by which the present procedures will be studied. This study must be very complete and lead into all departments and to individual desks to be sure no detail is overlooked. Only if the present process is fully known to the procedures man can successful correction of the procedures be instituted. Another all-important step in the planning is to schedule the completion of the project. In the smaller company's operation, which we are discussing, simplification work usually is done in available free time. Therefore, the project can easily fall by the wayside unless a definite completion schedule is set up and considered as important as the regular closing dates and issuance of financial statements.

Installation and Follow-up of a Planned Simplification

Complete installation of a planned simplification is, of course, very necessary. As a guide, it will be necessary to prepare written procedures and job instructions. In the process of their preparation, points previously overlooked are often brought to the attention of the systems installer and the system can be corrected at that point without too much difficulty or lost motion. It is important that the procedure writer have in mind that, although written instructions are necessary, they have three outstanding disadvantages:

1. They are never as clear and understandable to the operating personnel as to the writer
2. They can be easily misunderstood
3. They are often not read or not read carefully.

After all, it is difficult to describe a new process, or processes, so that it will

be clear and understandable to everyone concerned. For instance, were you to prepare a procedure on what, to most of us, is a simple every day procedure, that of driving a car, the detailed actions would be difficult indeed to describe to someone who had never previously driven, or even ridden in, an auto. Usually, any procedure covering a new process is complex to almost everyone except the the writer. Therefore, the most important single step in simplification installation is that of communication. Written instructions alone simply are not adequate and often serve to confuse rather than clarify. Actual on-the-job instructions must be a part of the installation.

Communication must go still further. Any change in accounting system can affect a manufacturing process, shipping operations, etc., so everyone must know about the change. There is also a psychological advantage to broadcasting the change. Very often the individual overlooked in communication becomes a deliberate stumbling block. One of the most universal complaints, whether warranted or not, in most operations is, "They never tell me anything." The means of communication can be memoranda, oral discussions, or conferences.

Any of these can be overdone. In the area of conferences, in particular, the systems man must be very careful. Too often a conference to solve a problem is called without proper preliminary planning. However, a conference is often vital to the success of a new system. To make it fruitful these rules should be followed:

1. Keep the conference group small.
2. Inform everyone well in advance of the purpose of the discussion.
3. Supply those attending with flow charts, procedure outlines, etc. well in advance. Discuss problems individually with as many as possible before the conference.
4. The conference leader must be prepared to offer something in leading the conference. He cannot expect to accomplish the desired results with just a get-together to "hash it over."

Communication and instruction, of course, are almost in the same field. However, in this article, instruction refers to on-the-job direction of the new procedure. Instruction and supervision of those affected by the new procedure is a very vital step in the success of any simplification effort.

The final step, which is possibly a never-ending task, is that of follow-up. First, the results must be compared with the original goal of the installation. If, for instance, personnel reduction was one of the aims of the simplification, there must be a follow-up to see that such a reduction has been accomplished. Often it must be accomplished by direct action of cutting the force. If there is no such action, the economies introduced by the new system may be absorbed

by a slower working pace among those concerned, and the office will still be apparently busy while the looked-for cost reduction has disappeared. There must also be a follow-up for compliance with procedure. After the installation is complete, it can still go astray. Perhaps a new problem arises. It is solved by the operating personnel in their own way, often correctly but just as often not in the most efficient manner. Therefore, follow-up must include checking compliance with procedure in the actual operation and correcting any faulty procedure or operation. The follow-up must be almost continuous since, with new problems arising daily, the actual operation can soon depart from the prescribed procedure.

Six Serviceable Examples

The fundamentals of simplification system installation have been covered. A few examples of actual simplification in action can be given. It is sometimes felt in an accounting department that everything is running smoothly and that not much opportunity exists for improvement. However, every systems engineer, systems accountant, and the controller must always be on the lookout for problem areas or opportunity for cost reduction. Here are a few examples that the author has uncovered in his experience:

Inter-plant orders — During a program of expansion and acquisition, branch plants had been acquired by the home corporation. These plants usually ordered materials from the home plant which were finished products for the home plant but became raw materials in the branches. Being accustomed to purchasing materials from the outside, the branches issued purchase requisitions to the home plant, which handled these orders exactly the same as a customer order, issuing an acknowledgment and all the various copies that were needed with the customer's order. No one thought of a simpler method of doing this but took it for granted that this was the correct procedure. Upon examination of the order system, it was found that the four pencil-written copies of the requisition could serve the same purpose and that the order department need not be involved in the handling, as the requisitions could be sent directly to production scheduling.

Branch plant purchases — In the same instance, the branches also made many local purchases directly. As the purchasing department at the home plant had to exercise some supervision over branch purchases, it was arranged that purchase requisitions would be sent to the home plant and the latter would issue purchase orders, asking each vendor to send one copy of the invoice to the home office and one to the branch plant. As the branch plant also secured approval

from proper authorities in the home plant, this system of purchase orders was simply additional paper work. This was particularly true in the case of small local purchases which were often made before any requisition was written or before purchase orders were issued. Therefore, the paper work was simply a follow-up to the actual purchase, and the vendor usually mailed out his first invoice before he received instructions from the home office for duplicate invoices.

Consequently, much time and effort was wasted in securing the additional copies and matching them in the home office. This was changed in that a block of purchase orders was assigned to the branch plant, which made local purchases and prepared its own purchase orders. Copies were sent to the home office and the invoices were sent there for payment. Any substantial purchases, of course, continued to have proper approval from the home plant.

Labor-distribution — In another manufacturing operation, considerable economy was achieved in the method of labor distribution. Actual hours worked were clocked on time cards and, in addition, time books were kept to record the actual time on various jobs in the plant. These time books were then brought in to the office and the information transferred to the back of the time card for each man, showing the various rates and jobs on which he worked. After the payroll was written, the time cards were processed on an accounting machine to classify the labor by departments charged. Upon study of this system, it was discovered that the man's time on each job was recorded by department in which the work was done. Therefore, the time books themselves were already, in effect, a labor distribution. In order to put this in a better form, time sheets were instituted, rather than time books, and after the time sheets were used for payroll purposes to credit each man with the proper rate for the job worked on, the total hours were simply added up on the time sheet turned in by each department. This total was extended by an average hourly rate for the department to arrive at the departmental charge. This eliminated entirely the machine processing.

Employee accounts receivable — Another instance of duplication of work, which was overlooked until brought to the attention of the supervisor by accident, was that of records kept on employee accounts. The employees were permitted to purchase a number of items from the company, including safety shoes and like items. The accounts receivable clerk kept a detailed ledger for such purchases. As the payroll department was charged with making proper deductions from a man's account, it also kept a detailed ledger account for each employee. The change indicated here was simply to abolish the payroll record of the employee's account and let the payroll staff use the employees' accounts re-

ceivable ledger for the purpose of checking off payroll deductions. This was another instance in which operating personnel, simply for their own convenience and without regard for extra work, had set up a supplementary record. The convenience was to avoid having to borrow the ledger from another section of the accounting department.

Salary overtime premium — Payroll simplification was installed as a result of study of the method of overtime premium pay calculation for non-exempt salaried employees. These salaried employees were paid on a semi-monthly basis and frequently worked overtime. As a result, due to the different number of working days in semi-monthly pay periods, a new overtime rate was calculated for each semi-monthly payroll. Also, with cost of living raises and individual merit raises, the salary rate was very often carried into pennies — for instance, $157.22 — and no uniformity existed even among comparable jobs. As a result of studying wage and hour regulations, it was discovered that an hourly rate developed on an annual basis could be used for overtime premium payment regardless of the length of the particular pay period.

In connection with this, a new salary chart was also introduced setting up all salaries in a scale with two to four dollar breaks. For example, a rate might be $124. The next pay bracket might be $127. Therefore, if there was any occasion to give either a cost of living rate increase or a wage increase, it automatically went to the next figure set up in the chart. As there was a pre-determined overtime premium rate for this particular salary step, the payroll department simply consulted a chart instead of calculating a new rate each time. This simplification is, of course, not possible in all operations, particularly if there is a union contract, as the exact rate of percentage or cents per hour must usually be adhered to. However, in many offices of smaller companies, there will be no particular problem developed as a result of using such a salary chart.

Watchfulness Required

The examples given above are not intended as a pattern for all companies but have been cited simply to illustrate the various opportunities that exist for paper work simplification. Even though a system may appear to be operating very smoothly and successfully, duplication and inefficient practices may be going on. Therefore, every controller or accounting manager must always be on the alert for possible labor saving opportunities. While, often, direct personnel reduction cannot be accomplished, the effort may be the means of keeping up with the increasing demand for reports without adding to the accounting staff.

A Practical Way of Allocating and Controlling Warehousing Costs

by STEPHEN B. ACHTER

THE ALLOCATION and control of warehousing cost is a problem which practically every company of any size has to face. How this is done in our company will be discussed in this paper.

Inadequacies of the Most Common Method

Let us start with the allocation of space costs and, to make it clear what we consider to be the advantages of our method, let us first take a look at one of the most common methods of allocating warehouse space, the square-feet-occupied method. To illustrate some of the inequalities of this method, let us make some assumptions about the space to be allocated. These assumptions, incidentally, usually fit the facts in the majority of cases:

1. In some portions of the warehouse, material can be stored only four feet high; in other portions, material can be stored twelve feet high. This situation could be the result of ceiling height floor capacity, or any of the structural characteristics of the building. Warehousing equipment limitations, also, may limit the piling height.
2. If the warehouse has excess capacity, it may be cheaper from the standpoint of handling costs to pile material only four feet high, even though higher piling would be possible.

Obviously, all groups competing for warehouse space at the cheapest cost per unit of material stored would be asking for space in that portion of the warehouse where material could be stored twelve feet high. By the same token, if there is no height limit, each group using warehouse space would want the warehousing crew to pile its material as high as possible. Since these are decisions that ought to be the responsibility of the warehousing organization, charging by square feet occupied has some serious disadvantages. It is true that these disadvantages can be overcome within the framework of the square-feet-occupied method by charging different rates for different sections of the warehouse. This,

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STEPHEN B. ACHTER, St. Paul Chapter (Twin Cities, 1949), is Division Controller, Roofing Granule Division, Minnesota Mining and Manufacturing Company, St. Paul, Minnesota. He has been with the company since 1939. Mr. Achter is a graduate of Macalester College, St. Paul, Minnesota.

however, introduces problems that can be avoided entirely by charging on a cubic-feet-occupied basis. Let us explore this method.

Cubic-Feet-Occupied Charge for Warehouse Space

Since a great deal of material, especially bagged material, is stored on pallets, we have worked out a unit 4′ x 4′ x 4′ which we call a pallet. Without departing from the cubic-feet-occupied method in theory, this gives us a unit which is readily understood by all concerned. A pallet to us means a space in the warehouse equivalent to 64 cubic feet.

In order to keep our example simple, let us assume that we have a warehouse with four usable storage areas 4′ x 4′ in size which has a yearly fixed cost of $128. Let us also assume different storage conditions for each area as follows:

Area 1. Can be stored one pallet high and is stored one pallet high.

Area 2. Can be stored two pallets high but is stored one pallet high.

Area 3. Can be stored three pallets high but is stored two pallets high.

Area 4. Can be stored two pallets high but is vacant.

Proceeding with the system we use, all areas combined contain a total of four pallets. Since the total fixed cost of the warehouse is $128 per year, each pallet will be assigned $32 cost per year. If the units in each pallet load are the same, the cost per unit of material stored will be the same. The fact that some areas can be piled only one pallet high or that some space is unoccupied is automatically taken care of in the distribution. It makes no difference, therefore, where or how high materials are stored in the warehouse. Every product will be charged the same cost per cubic unit occupied.

Although we have described the method only in terms of pallets of material, this method can be used with material stored in boxes, shelves, racks, etc. Just pick a unit that is convenient for your particular type of warehousing and pro-rate the fixed warehousing costs accordingly. In our company, for example, everything in converted to "pallets" whether stored on pallets or not.

Some Problems Solved

Now that we know how the method works, let us see how it overcomes the disadvantages of the square-feet-occupied method.

On a square-feet-occupied basis, the charges are lower per unit of material stored where it is possible to store more than one unit high. On the cubic-feet-

occupied basis, height of piling makes no difference in the allocated charges per unit of material. As mentioned before, in a warehouse with excess capacity, it may be cheaper from a handling cost standpoint, to pile material only one unit high, regardless of warehouse height. Under a strict interpretation of the square-feet-occupied basis, this would put a cost penalty on material so handled while under the cubic-feet-occupied basis the allocated charges would remain the same per unit of material.

In view of the fact that there are inequalities in allocating the warehousing charges under the square-feet-occupied basis, there is a constant struggle between the warehousing organization and some group in the company which wishes to keep its allocated warehousing charges to a minimum. It would be conceivable, therefore, to make a "deal" with the warehousing crew for favored treatment, even though this may not be in the best interests of the company. Charging by cubic feet occupied eliminates this problem and leaves the warehousing crew free to handle all material with the best interests of the company in mind, without fear of discriminating against any "pressure" group.

Charging by cubic feet occupied, therefore, solves at least two problems that are created by other methods:

1. Eliminates inequities in charges resulting from the physical construction of various locations within a warehouse or warehousing equipment limitations.
2. Makes it possible for the warehousing organization to operate freely, in the best interests of the company.

Control of Costs Made Easier

Using the above method of allocation also makes the analysis and control of warehousing costs an easier job. Take, for example, the common problem of comparing alternative costs at various locations. A check on the cost per square foot of space is only part of the answer. Only after the third dimension of height is introduced and total cubic storage space is considered can a direct comparison be made. In other words, by using the cubic-feet-occupied method at all locations, a direct comparison of costs can be made.

Another problem in control is the determination of the extent to which available space is being used; percent occupied is a common term for this ratio. Once the maximum number of cubic units in a warehouse is determined, a direct comparison between units occupied and maximum possible units can be made. In our example explaining the cubic-feet method, there were four pallets in storage out of a maximum of eight, or 50 percent. Using the square-feet-occu-

pied method in our example, there are forty-eight square feet occupied out of a maximum of sixty-four square feet, or 75 percent. Obviously, unless these percentages are analyzed further, some erroneous conclusions may be drawn about how much space is still available for storage.

Charging by cubic feet occupied, therefore, appears to have some advantages over other methods. Once the method is explained to and understood by the groups which are charged for warehouse space, they are more willing to accept the charges and turn their efforts in the proper direction, that of controlling the costs rather than attempting to obtain favorable allocations. They know, for example, that attempts to "influence" the warehousing crew will have no effect on their charges but reducing the amount of material stored (thereby reducing cubic feet required) will. The warehousing organization is free to concentrate on the problem of warehousing most efficiently; outside groups are free to concentrate on the problem of keeping the amount of material warehoused down to a minimum.

Now, that space costs have been discussed, let us move on to the second group of warehousing costs—handling costs.

Handling Costs Allocation

In our company, the basic information for all handling costs as well as their distribution to divisions and commodities is found on the stores requisition report. This is the warehouse equivalent of an operating department production report, showing the quantity and type of material handled. It is a record of all material moving out of the warehouse only and is expressed as the number of pallets moved. In this case, however, a pallet has the conventional meaning of something to stack material on and does not represent a cubic unit of storage space. Each pallet represents one unit, whether fully loaded or not. Each quarter a summary is made of the stores requisitions by division. This is the basis for allocating warehouse handling to divisions.

It will be noticed that our allocations are based on a record of materials moving only one way—out of the warehouse. Since the material that is withdrawn from the warehouse is the same as the material going into the warehouse, the proportion of material handled by division or commodity does not change whether you use "in" or "out" figures. To us, the "out" figures appeared to be the logical choice because no material can be withdrawn from the warehouse without a stores requisition. Therefore, no form for movement "in" was necessary.

Since a separate allocation is made for space charges versus handling charges,

an analysis of total warehousing costs is made to get a split between space and handling costs. Once this split is made, the allocation of the charges is a relatively simple matter.

As can be seen, the information which is available makes it possible to calculate a cost per pallet handled. Analyzing and comparing this information for different periods of time or different locations gives us the type of information we need to control these costs. The fact that our warehousing costs are down is all the evidence we need to prove to ourselves that we are on the right track.

A Favorable Outcome

By splitting our warehousing costs into two general categories—space costs and handling costs, establishing a unit of measurement in each category and calculating a cost per unit, we have been able to control and reduce our warehousing costs. All in all, it has been the answer to many of our warehousing cost problems and may also be the answer to some of yours.

How to Move Toward More Adequate Educational Programs

by JENE A. SUMNER*

GEORGE J. KALCIK in his provocative article ("A Proposal to Improve Accounting Education by Certifying Industrial Accountants," *N.A.A. Bulletin,* April, 1959) puts his finger on certain "sore spots" in the training of industrial accountants. He notes the weaknesses of much of the secondary school training of today, the lack of current teaching materials, the inadequate recognition given superior training and achievement, and program inadequacy in terms of time. It is this last sore spot which could bear more consideration than that given in Mr. Kalcik's article.

The 4-year period (128 semester hours) in which the bachelor of science degree may be awarded may well be too short for the attainment of professional status in terms of educational background. In this period of time it is difficult, if not impossible, to complete the necessary minimum of liberal arts courses, basic business administration courses, basic and advanced accounting courses, and still find time to expose the student to such

* Accountant, Woodward Iron Company, Woodward, Alabama.

matters as personnel problems, union labor relations and generic term awareness.

What can we do within the present educational framework to improve the situation? Three courses of action may be considered.

A step can be taken toward professionalization of training by giving financial recognition to the completion of the fifth year — a year in which major emphasis is given to advanced accounting courses that emphasize industrial accounting. Today the financial rewards offered by industry for completion of a fifth year are not such that the student is led to believe that it is important. Recognition by industry will lead to recognition by students.

Some schools may develop programs designed specifically for training in industrial accounting. Development of such programs would involve at least three changes in present programs:

1. Some of the courses now required because they are listed as C.P.A. examination prerequisites may be replaced by courses more useful to the industrial accountant. The eight-hour requirement in finance may be questioned as might the eight-hour business law requirement of many schools. The time spent in a governmental accounting course might be put to better use in a course in advanced cost accounting. Sacrifice of some of the advanced accounting problems courses in the interest of analysis of data, internal auditing, budgeting, controllership and other such courses might result in an improvement of the program.
2. Students should be guided to select as their elective courses those that will contribute most to their preparation for careers in industrial accounting. Most of the courses that might be suggested are available. And there is room in the present 4-year program for the inclusion of several business courses such as industrial management, production control, time and motion study, labor problems, collective bargaining, personnel administration and industrial psychology.
3. The careful selection of liberal arts courses might make the program more useful. Logic, psychology, sociology, and communications, both written and oral, might be among those considered.

Industrial firms should develop orientation and training programs that give the new employee the necessary insight into the organization of the firm, technical terminology, and the processes of manufacture.

Thus, education for industrial accounting can begin to move forward within the present educational framework if industry and schools work together for recognition of achievement, guidance in course selection and training in the special techniques of the employing firm.

Alternatives in Converting the Statements of Foreign Subsidiaries

by ROBERT E. JOHNSON

FOREIGN SUBSIDIARIES and branches are becoming more significant as a part of the over-all operations of United States companies. More and more companies are expanding operations into foreign countries. The investment in existing foreign operations has also been increased, reflecting management's confidence in the return of stability of foreign markets. The swelling tide of overseas investment has, in turn, increased interest in the methods and procedures used in reporting the results of these operations.

The Accountant's Dilemma: Stating the Problem

The responsibility for reporting rests with the accountant; but the complexities of foreign exchange places the accountant in a dilemma. He must provide current reports which will satisfy the needs of management in their direction and control of foreign operations. At the same time he must abide by the principles of good accounting. In the field of currency convertibility, these two requirements are sometimes difficult to reconcile. Not too much has been written to guide the accountant toward solving this dilemma. Also, much of what has been written is applicable only under highly developed conditions of communication and reporting between the foreign operation and the parent organization.

The reason for such a scarcity of literature on the subject is probably that only a handful of United States companies as yet have foreign subsidiaries. Then, too, accounting needs and reporting techniques vary considerably among and within individual companies with foreign operations, depending upon:

1. The type of business represented by the foreign operation.
2. The degree of control exercised by the parent company.
3. The relative importance of the overseas operation in the overall company picture.
4. Whether or not the statements of such operations are consolidated with the parent company.

ROBERT E. JOHNSON, Minneapolis Chapter, 1957, is Supervisor of International Division Accounting, Honeywell Regulator Company, Minneapolis, Minnesota. He was graduated from University of Minnesota with a B.B.A. degree in Accounting. Mr. Johnson is a Naval Officer in the Naval Reserve.

5. The capability of the foreign operation to provide accounting information.

To state the objectives of this discussion, they are just two in number. First, let us consider the pros and cons of a market rate versus a pegged rate in foreign exchange accounting. Second, having selected one or the other of the rates, how should it be applied in converting pesos, cruzeiros, francs, or lira into dollars?

Two Basic Considerations; Exchange Rate Possibilities

The financial statements supplied by foreign operations are stated in the currency of the foreign country. One of the accountant's functions is to restate these reports in terms of United States dollars to facilitate comparison and consolidation with other foreign operating statements as well as with the parent company statements.

The complexities of foreign exchange permit varied interpretations of foreign operating statements. Also, companies differ in the manner of reporting the investment in and the operating results of foreign operations. Some companies report only their investment in foreign operations. Other companies consolidate fully the results of foreign operations with the parent company operating statement. But, whether the foreign operating statements are consolidated or not, the decision must be made as to how to restate them on the basis of a common denominator for comparison. For our purposes, the common denominator is U.S. dollar. The objectives may be as follows:

1. What exchange rate should be used in the conversion procedure?
2. How should this rate be applied to the financial statements?

There is a multiplicity of exchange rates from which to choose and, also, there are arguments pro and con, regarding each. Exchange rates are identified as free, curb, market, official, pegged, etc. Some of these are synonymous but all fit into either one of two categories—fluctuating or fixed. The rates may vary according to whether they are buying or selling rates and whether they are quoted by United States financial publications or institutions or by those of a foreign country. There does not appear to be an exchange rate source which is not open to argument from individuals with their own legitimate reasons for using some other source. For example, a rate quoted by a New York bank may be a buying rate for foreign currency in this country. This rate may not be appropriate in determining the converted dollar liability of a foreign operation when such dollars must be purchased in the foreign country. In some instances, daily buying rates supplied by the foreign operation may be feasible. In other instances,

lack of communication or just plain expediency may dictate that a month-end rate secured from a U.S. source is the most practical.

No matter which source is selected, the accountant's watch-word, consistency, should prevail. In other words, exchange rates should be procured from the same source and in the same manner from period to period to avoid differences which could arise as a result of an exchange differential among sources.

Pros and Cons . . . Fluctuating Exchange Rate

In selecting a source for exchange rate quotations, the advantages and disadvantages of fixed as opposed to fluctuating rates should be considered. To simplify the discussion, curb, free, buying and selling rates are included under the caption, market rate. It is assumed that these rates all fluctuate with the supply and demand for dollars in the foreign country. Market rate advantages are chiefly that it:

1. Provide a closer approximation of the dollar value of foreign currency.
2. Emphasizes fluctuations in the exchange value of foreign currency.

Companies with substantial overseas investments may feel obligated to expend the time and effort necessary to provide the most accurate measure possible of the dollar value of foreign investments and of the changes in this value resulting from rate fluctuations. Because of anticipated changes in ownership, increases in capitalization or the possibility of liquidation, it may be necessary to have available the best possible measure of the dollars represented by the foreign currency.

Market rate disadvantages are:

1. Conversion gain or loss resulting from exchange fluctuation must be reported.
2. Necessitates constant review for possible revision.
3. Increases possibility of errors in calculations.
4. Complicates conversion procedures.
5. Complicates later detailed statistical analysis to the extent that it cannot readily be tied out to operating statement control figures.

Conversion gain or loss arising as a result of exchange fluctuation creates additional reporting problems. Such gains or losses may be deferred or they may be charged or credited to operations for the period. Significant gains or losses included in current operations become a factor when comparing the operating results of one period with those of another. Then, too, exchange gain or

loss may be a confusing concept to nonaccountants, in interpretation of converted foreign operating statements.

At the end of each period, market rates must be reviewed for possible changes. Obtaining an average market rate for a period necessitates additional pre-conversion preparation. As the number of different rates to be worked with increases so does the possibility of errors in calculation. When these rates are received from overseas, limited communication may complicate verification.

Complications in the conversion procedure arise as a result of fluctuating rates. In restating the balance sheet with fluctuating rates, it is possible to (a) convert the current assets and liabilities at the *month end* rate, (b) convert the property additions at the *average monthly* rate and (c) convert the long term liabilities and net worth at a *historic* rate. The disadvantages will become more apparent when we come to fixed rates and application of exchange rates to foreign statements.

. . . Fixed Rate

A fixed rate may be either the official rate of the country or an arbitrarily pegged rate selected by the accountant, that does not fluctuate. An official rate is the exchange rate quoted by a foreign country in relation to dollars or currency of other countries. The official rate of the English Pound is $2.80, of the Mexican Peso is 12.50 Mexican Pesos to one dollar, 360 Japanese Yen to the dollar, etc. The official rate does not fluctuate with day-to-day changes in the value of currency exchange. It changes only with a major revaluation of the currency of the country. A pegged rate can be selected arbitrarily from a free or market rate quoted as of a certain day, from a market rate which has not changed over a relatively long period of time or from the effective exchange rate as of the date of initial investment in the foreign operation. In many countries the market rate has remained unchanged over a relatively long period of time and could be treated as a fixed rate.

The advantages of a fixed rate are:

1. Reported conversion gain or loss is nonexistent or minimized.
2. Conversion and reporting procedures are simplified.
3. Intercompany transactions are simplified.
4. Comparisons of the operating results of different periods are not influenced by fluctuations in the exchange rates.
5. Conversion procedures are more readily adaptable to machine accounting.

Conversion gain or loss reporting is nonexistent if the same fixed rate has been used since the inception of a foreign operation. Should a devaluation in the foreign currency or a large differential between the market and fixed rate make it advisable to select a different fixed rate, conversion gains or losses would still be minimized on the converted operating statements of foreign subsidiaries.

Frequently, accountants are requested to provide detailed statistical analysis of foreign operating figures, such as a schedule of sales and profits by sales division or a schedule of selling expense by line sold. The control figures for the detail schedules are the converted dollar figures on the profit statement. When a fixed rate is applied, it is not necessary to manipulate exchange rates to relate the converted dollars on the detail schedules to the dollar control figures on the profit statement.

Intercompany transactions can be reflected in foreign currency on the subsidiary's books at the same fixed exchange rate used by the parent in restating foreign currency to dollars. This will eliminate the additional communication and manipulation of exchange rates necessary to restate foreign subsidiary inventory and payables to parent to the original dollar cost for consolidation purposes.

Conversion procedures may be more easily transferred to machine accounting when using an official rate than when using a fluctuating exchange rate. With the tendency to convert as many accounting operations as possible to machines, it may be wise to anticipate such a possibility. Machine conversion of foreign operating statements would be very difficult to prepare with a multiplicity of rates necessary to restate foreign currency to U.S. dollars. If only one rate is used in converting these operating statements and the same rate is used month by month, it is entirely possible that such an operation could be put on machine accounting. When a parent organization has many subsidiaries and branches in foreign countries, the possibility of machine accounting, with its speedy results, is very attractive. It would be advantageous for management to learn the results of foreign operations as quickly as the results of domestic operations are known. With the application of machine accounting such a possibility exists, but complications resulting from multiple exchange rates may delay such reporting.

In guiding and directing overseas operations, management is not normally as concerned with the actual dollar figure represented by the foreign currency as it is with the operating efficiency and relative profitability of these overseas operations. That the accountant institute procedures to provide management with the detailed analysis current enough to make control decisions, becomes most important. A sufficiently detailed analysis achieved only after a complicated manipulation of exchange rates is costly and time-consuming. Management wants op-

erating figures immediately. The accountant can provide these figures faster and more efficiently by using a fixed exchange rate than he can by using a fluctuating rate. Little or no accuracy is sacrificed insofar as control or decision-making figures are concerned.

A fixed rate for conversion is not without its disadvantages. It depends how the figures so derived are to be used. Certainly, in using a fixed rate for a currency which fluctuates in value in relation to dollars, accurate dollar values are not stated. Also, significant exchange fluctuations are not reflected in the operating statements from period to period. Conversion gain or loss is definitely a factor in doing business outside the country and management may want to be informed of this factor.

With the risks inherent in doing business abroad, it is not conservative to overstate assets and profits by using a fixed rate that is higher than the prevailing market rate. To use the fixed rate only when it is less than the market rate is conservative but the advantages of a nonfluctuating rate would be lost.

Exchange Rate Application

The second aspect of conversion procedure is to determine how the selected rate should be applied in restating foreign operating statements into dollars. The exchange rate determination and its application are very much interrelated. The factors determining which rate will be used also influence how this rate will be used. For example, if the only thing wanted is a rough approximation of the dollars represented by the foreign currency on the foreign operating statements, the official rate may be applied to the entire operating statement of the foreign operation. On the other hand, if a very close measure of the dollars represented by the foreign currency is desired, other more careful measures have to be taken.

In the American Institute of Certified Public Accountants' Research Bulletin No. 43, certain procedures are indicated as acceptable for translating foreign operating statements to dollars. A careful study of the Institute's bulletin will provide a basis for determining appropriate conversion procedures. Some of the Institute's recommendations are stated below:

1. "Cash, accounts receivable, and other current assets, unless covered by foreign exchange contracts, should be translated at the rate of exchange prevailing on the date of the balance sheet.
2. "Fixed assets, permanent investments and long term receivables should be translated into dollars at the rates prevailing when such assets were acquired or constructed.
3. "Current liabilities payable in foreign currency should be trans-

lated into dollars at the rate of exchange in force on the date of the balance sheet.

4. "Long-term liabilities and capital stock stated in foreign currency should not be translated at the closing rate but at the rates of exchange prevailing when they were originally incurred or issued.
5. "The operating statements of foreign branches or subsidiaries or of domestic corporations conducting their business in foreign currencies (buying, selling and manufacturing) should preferably, where there have been wide fluctuations in exchange, be translated at the average rate of exchange applicable to each month or, if this procedure would involve too much labor, on the basis of a carefully weighted average.
6. "Realized losses or gains on foreign exchange should be charged against or credited to operations.
7. "Provision should be made, ordinarily by a charge against operations, for declines in translation value of foreign net current and working assets (unrealized losses). Unrealized gains should preferably be carried to a suspense account, except to the extent that they offset prior provisions for unrealized losses, in which case they may be credited to the account previously charged."

The Institute's bulletin points out that practical problems may arise in the application of recommended procedures and these problems should receive careful consideration in each case.

Contradictions May Arise

Conversion procedures may vary, depending upon the circumstances in each case. The accountant should not only be aware of possible variations in translation methods, but he should also know of the contradictions that may arise in using even the most accepted procedures. Once the fixed rate is changed, or in using a fluctuating rate, any of the above procedures can result in dollar figures which are contradictory. For example, consider these different situations.

The exchange rate in effect the first day of the period may be used in restating the balance sheet while an average of rates during the period may be used in converting the profit statement. When the rates differ, the dollar value assigned to the inventory as stated on the balance sheet is different than that assigned to the inventory charged to cost of sales on the profit statement.

Parent company invoices to foreign subsidiaries are normally in U.S. dollars. The foreign operation reflects the dollar liability to the parent in foreign currency on their operating statements. Theoretically, the parent company should

use the same exchange rate in restating the foreign currency liabilities back to U.S. dollars. However, the communication necessary to effect such an accurate restatement may be impracticable and the foreign operation may use a different exchange rate to set up the foreign currency liability than the parent uses to reflect the liability in dollars at the end of the period. The result may be that a different exchange rate is used in restating dollar liabilities to parent than is used for restating the inventory represented by that liability and a different exchange rate, again, in charging the inventory purchases from the parent into cost of sales.

Property is stated at its cost in local currency on the foreign subsidiary's balance sheet. Also, local depreciation charged against income will match the additions to the depreciation reserve. To reflect original dollar costs on the converted statements is not easily achieved. It entails keeping duplicate property records of the foreign operation, in dollars, at the parent company. All property transactions of the foreign subsidiaries must be relayed to the parent. To do this, a company with many overseas operations is faced with a great deal of additional record keeping. Practically speaking, the benefits derived may not be worth the added cost. A very simple and practical alternative method of handling property conversions is to convert only the current month's net additions to the gross property accounts as indicated on the foreign subsidiary's balance sheet. The dollars so derived are then added to the dollar balance as of the end of the previous period. The dollar depreciation reserve balance is derived by determining the ratio of depreciation reserve to gross assets, as indicated in foreign currency, and applying this ratio to the dollar value of the gross assets on the books of the parent.

This method does not accurately preserve original dollar costs. Unless the parent company receives supplementary information on removals and can identify their original cost, they are buried in the net additions figure and, in effect, are removed at the current rate. When depreciation charges against operations are related to net additions to the depreciation reserve, a further contradiction may exist. In a period in which the reserve balance is reduced by disposals larger than depreciation charges, a negative depreciation charge would be indicated in dollars. The exchange rate differential between additions and removals will be reflected as conversion gain or loss on the converted statements.

Theoretically, in translating the profit and loss statement of foreign operations, the exchange rate prevailing for each day's sales should be used and operating expenses should be stated at the dollar exchange rate prevailing the day the expenses were recorded. However, it would require a great deal of communication and manipulation of exchange rates. A more practical solution would be

to obtain an average of the market rates prevailing during the period and apply this average "across the board". The problem, again, is that depreciation might be added to the reserve at one dollar figure and charged to operations at another. Also, the cost of sales would not be a reflection of inventory dollars on the balance sheet. The provision for taxes may be accrued at one dollar figure and paid at another dollar figure.

The usual conversion procedure restates earned surplus at historical dollar values by converting only the current additions at the current rate. This method indicates to the stockholders what the foreign currency was worth as an addition to earned surplus and not how many dollars are available for dividends.

Familiarity Needed With the Many Alternatives

It has been pointed out that the accounting and reporting procedures involved in maintaining foreign operations are not standardized. One area of the problem is understanding of foreign exchange and its effect on reporting the results of foreign operation. The exchange rate used and the way the rate is applied in the conversion procedure is not a hard and fast rule. The exchange interpretation may vary not only between companies but within companies, depending upon the type of foreign operation reporting, the importance of the foreign operation to the parent company, the degree of control by the parent company, whether foreign operating statements are consolidated with the parent company or not, and upon the availability of information from the foreign operation.

The accountant should be aware of the various alternatives in selecting and applying foreign exchange and in restating foreign operating statements. Also, he should understand the significance and effect the various alternatives may have in the reports to management and the stockholders.

Vendor Code Numbers

by WILLIAM E. MITCHELL*

JUST AS EASILY we could use some term other than vendor code numbers such as customer code numbers, account code numbers, master code numbers or, simply, code numbers. But, whatever term we choose it gives us something to think about. According to figures from the U. S. Department of Commerce, there are 4,200,000 firms doing business in the United States. What is startling is that only one percent of these 4.2 million firms represent sixty-five percent of the total business volume. To rephrase that, less than 40,000 out of 4.2 million firms are doing two-thirds of all business in the nation. Concentration is not limited to larger companies buying and selling to one another across the state lines, either. Practically every firm within a particular industrial center is serviced by a relatively few local vendors. Again, this is concentration but on a local basis. What is the point of these statistics? Simply this: Most of us in manufacturing buy goods and services from one another and sell most of our finished goods to those in wholesale or chain-retail distribution. Now, going back for a moment, it is safe to assume that most large companies are doing a high enough level of business volume to warrant tabulating equipment. It is reasonable to assume also, then, that many of the 40,000 major firms process either accounts receivable or accounts payable (or both) on automatic equipment and, accordingly, there is a crying need for standardized account numbers.

What is happening today? Company X receives an invoice from Company Z. The first step in the processing of this invoice requires a clerk to search for a vendor code number assigned to Company Z. This number must appear on the invoice or the attached vouncher, before the item can be sent to the key-punching department. In the meanwhile, assuming that X and Z have a normal interchange of business, the accounts receivable clerk could be applying Z's cash remittance on a recent billing. The clerk must first find the customer code number assigned to Z. Company X's accounts payable department may have Z listed as 993984, while the accounts receivable department has it listed as 066-18-7286. Now, another corporation, also doing business with Z, also has assigned it a pair of numbers, a customer number and a vendor number, and is also paying two or more girls to look these numbers up every time a piece of paper is received from Z.

How many thousands of times are pages in a book flipped this way and

* Senior Systems Analyst, Sylvania Electric Products, Inc., Camillus, N. Y.

that, how many times are visible-record cards scanned, rotary-files twirled, looking for the same code numbers over and over and over again. Such clerical labor as this contributes nothing to productivity. It merely adds more to office overhead and delays processing the most essential types of transactions in business, cash transactions. And, frustratingly enough, most of the numbering systems are rather similar in that they are basically alphanumeric and range from 5 to 7 digits. There is a chronic search for new equipment or new methods that would speed up this process of number-searching. Obviously, the solution lies in the use of standardized account numbers, i.e., throughout the country, the companies concerned would each show its standard indentification number on its invoices and voucher checks as commonly as they now show their telephone numbers or cable-codes. Such a number could appear on purchase orders, acknowledgements, even letterheads. A central headquarters would have to assume responsibility for assigning these numbers.

However, the task is not so titanic an undertaking as it first seems. The U. S. Department of Commerce, Dun and Bradstreet and other organizations already have excellent alphabetic listings of most business firms and there are a battery of mathematical formulas which can be applied to a master listing, providing each business with a logical identification number. The systems could tie in multiple-plant companies with the home office (or paying office) and could allow for expansion. The Federal Government found a way to number millions of workers under the social security plan. What then would be so impossible about similarly numbering these 40,000 business firms (or even more)? If commercial banks had not adopted bank clearing numbers when they did, expansion of our economy would have been seriously handicapped. As a matter of fact, our economy can be thought of as millions of automobiles roaring down a six-lane super highway at top speed. If bank clearing numbers were to mysteriously disappear from the face of checks, it would have the effect of all these automobiles simultaneously slamming on their brakes.

Preferably, the identification number should appear in standard format, such as appearing in a definite rectangular or diamond shaped box. It might, for instance, appear in the N.A.A. circular emblem, such as the one appearing on the face of the *Bulletin!* It is something to think about, isn't it?

Beyond These Covers

Books

Guides for Business Analysis and Profit Evaluation

Office of Distribution, U. S. Department of Commerce, Washington 25, D. C., Paper Bound, 1959, 76 pp., 30¢.

This substantial pamphlet gives greatest attention to ratio analysis, distinguishing between operating and financial ratios and devoting a chapter to each. A final chapter deals with sources of data by types of industries, primarily in wholesale, service and retail lines.

Handbook of Industrial Research Management

Carl Heyel, Editor, Reinhold Publishing Corporation, 430 Park Avenue, New York 22, New York, 1959, 513 pp.

Many sides of research activity are presented in the seventeen separately-authored contributions to this volume. These include "Research Cost Accounting and Control" (by Walter B. McFarland, N.A.A. Manager of Research), "Budgeting for Research" and "Top Management Reports and Controls." Other topics include "Research Departmental Administration", "Establishing Research Projects" and "Government Contracts."

Work Management in the Office

Elmer V. Grillo and C. J. Berg, Jr., McGraw-Hill Book Company, 330 West 42nd Street, New York 36, New York, 1959, $7.75.

The various techniques which can be used to accomplish work measurement form the topic of the second of three groups of chapters in this book. These techniques are identified as estimates, time records, stopwatch studies, work sampling, micro-motion studies and predetermined time standards. The final chapters deal with application of work measurement in the office and include consideration of inventories.

Statistical Forecasting For Inventory

Robert G. Brown, McGraw-Hill Book Co., 330 West 42nd Street, New York 36, New York, 1959, 23 pp., $7.75.

A "how to" book in an area of great interest to businessmen, economists and accountants, this treatment is mathematical in approach but the author has endeavored to segregate the most difficult portions in Appendices A to D. The text is represented as "a translation (of mathematical dialect) into business English."

Data Processing—1959 Proceedings

Charles H. Johnson, Editor, National Machine Accountants Association, Mt. Prospect, Illinois, 1959, 394 pp., $10.

Addresses given at the 1959 conference of the National Machine Accountants Association are offered here. Such topics as "What to Automate," "Centralized or Decentralized Machine Accounting," "Determining Equipment Needs," "Small Loan Accounting," "Pipe Line Accounting," "Warehousing and Order Writing," and "General Ledger Accounting" suggest the range of the approximately 50 topics covered.

Handbook of Annotated Forms for Tax Practice

Roberts, Schultz, and Mayer, Prentice-Hall, 70 Fifth Avenue, New York 11, New York. Second edition, 1959, 725 pp., $24.95.

Intended to fill a void in treatment of procedural matters related to tax practice, this volume is a revision of its first edition in the light of "nine years of active use in three separate tax offices." The treatment is comprehensive and forms, filled out and accompanied by comments (in readable text and legible type), relate to such diverse matters as the corporate income tax and

conference procedure before the internal revenue service.

Auditing in the Construction Industry

American Institute of Certified Public Accountants, 270 Madison Avenue, New York 16, New York, 1959, Paper Bound, 19 pp., 50¢.

A brief presentation of types of problems encountered in auditing contractors' financial statements for certification, this pamphlet is also informative on elements of cost peculiar to the situation of contractors, among them nonreimbursable costs on cost-type contracts, charges for rented equipment, application of manufacturing, engineering and general overhead, etc. The job-site audit is also treated.

Budgeting in Public Authorities

Study Group, Royal Institute of Public Administration, The Macmillan Company, 60 Fifth Avenue, New York, N. Y., 1959, 299 pp.

A description of the "public section" of the British economy precedes, in this volume, a comprehensive presentation of the preparation and use of governmental budgets, including that of the "central government." Revenue, capital expenditure and cash budgets are treated separately. There is a brief bibliography at the close of the book.

Punched Card Data Processing Annual

Gille Associates, Inc., 956 Maccabees Bldg., Detroit 2, Michigan, 1959, 240 pp., $15.

Subtitled "applications and reference guide," this volume surveys "data processing applications" and describes some fifty applications classified to billing, sales analysis, inventory control, accounts receivable, payroll, accounts payable, general ledger, production control, cost accounting, premium accounting, operations research and miscellaneous. A final section deals with "wiring tips and techniques."

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